

MacWEEK

18 April 1989 Vol. 3 No. 16

W O R K S T A T I O N N E W S

Work group CAD
See Page 32.

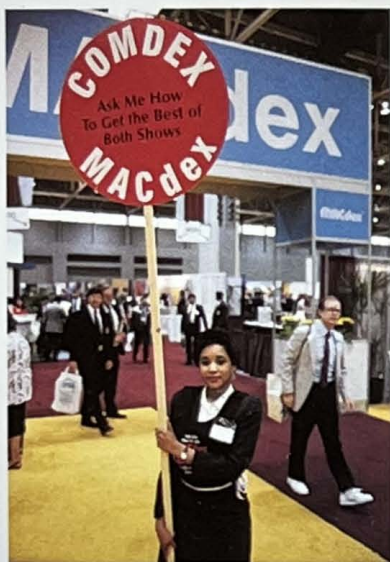


MACdex off to slow start in Windy City

By Jon Swartz and Dan Ruby

Chicago — The Triple Crown of April Macintosh trade shows got off to a slow start with last week's first running of The Interface Group's Macintosh Distribution Expo, or MACdex. While its thoroughbred parent Comdex/Spring was attracting its largest-ever attendance, the Mac-specific entrant pulled up lame and finished far out of the money.

MACdex attendance fell rather short of the 5,000 to 7,500 people predicted by show organizer The Interface Group of Needham, Mass. The show floor featured exhibits by fewer than 30 vendors, mostly little-known companies with minor products. An ambitious program of conference sessions featuring major names in the Macintosh community attracted virtually no attendees.



Comdex attracted its largest-ever attendance, but MACdex drew sparse crowds and few vendors.

In his keynote speech, Claris President Bill Campbell called MACdex "an idea whose time has come," but his company was conspicuously absent, along with just about every well-known name in the Macintosh market.

"The show wasn't up to the par of a small regional show — or a
See MACdex, Page 8

Sun sparks workstation wars with RISC machine

By Richard Rawles

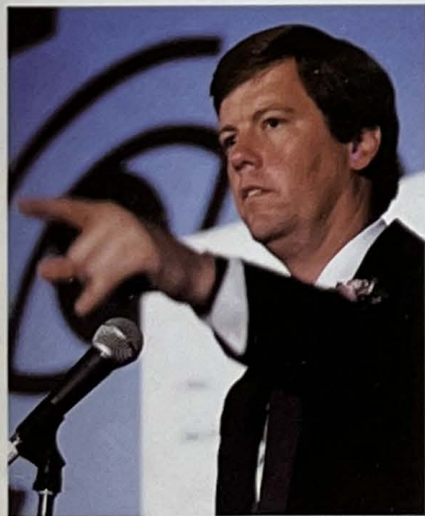
San Francisco — Sun Microsystems heated up the workstation wars last week with the long-anticipated unveiling of its first RISC-based computer, several workstations based on the

Motorola 68030, and a range of other products and peripherals.

Serving up what he called "another high, hard fastball straight down the middle," Sun President Scott McNealy told an audience at San Francisco's Civic Auditorium,

"There should be no doubt from now on that Sun is not just a technical workstation vendor but a broad-based general-purpose computing hardware and software company."

At \$8,995, the entry-level SPARCstation 1 desktop computer is cheaper than the comparable DECstation 3100 and competitively priced with the Mac IIx. The new machine comes with 8 Mbytes of RAM and a SPARC processor, Sun's reduced instruction set computing (RISC) chip. It executes 12.5 million instructions per second (mips) — three to five times the performance of
See Sun, Page 8



Sun President Scott McNealy: serving "another high, hard fastball straight down the middle."

Taiwanese clone nears market

Akkord set for legal battle after first U.S. showing

By John Battelle and Henry Norr

Chicago — Last week's MACdex show here marked a milestone in what increasingly appears to be a serious effort to bring Mac clones to market.

Akkord Technology Inc. demonstrated a Mac-compatible machine equipped with Apple ROMs but otherwise consisting entirely of independently designed components, according to the Taipei, Taiwan-based company.

Lloyd Chen, Akkord's president, said the company will begin marketing the clone in the United

States for "less than the price of a Plus" as soon as the Federal Communications Commission clears its application for certification, probably in about two months.

The clone will initially ship with

genuine 128-Kbyte (Mac Plus) ROM chips that have made their way from Apple dealers and distributors onto the open market. Within three months, however, the
See Clone, Page 10



Lloyd Chen, president of Akkord Technology Inc., displays the company's Mac clone and laptops at MACdex last week. Chen said he expected to begin marketing the clone within two months.

32-bit color to blaze bright at NCGA show

By Connie Guglielmo

Philadelphia — Apple is expected to paint the town red — and green and blue — when it arrives here this week for the 10th National Computer Graphics Association (NCGA) show.

The four-day conference, a showcase for the latest in computer graphics gadgetry, will play host to Apple's introduction of Jackson Pollock, its long-awaited implementation of 32-bit QuickDraw (see MacWEEK, April 11).

Apple last week said that more
See NCGA, Page 10

Object lessons for Mac

By Daniel Farber

Cupertino, Calif. — Apple is giving notice to Macintosh developers that object-oriented programming (OOP) will become the only way to write Mac software and that eventually the company's development tools and system software will be merged in a uni-

fied object-oriented environment.

The early warning signals have already been posted.

"If you don't learn object-oriented programming now, you will not be able to program the Macintosh later and you will be months or years behind those who can,"

See MacObject, Page 9

L A T E N E W S

The Word is made ready

Redmond, Wash. — In the beginning was the Word, but this week there's Word 4. The new version of Microsoft Word, which commands an estimated 70 percent of the Mac word processing market, ships this week. Originally scheduled for release last fall, Version 4.0 adds new table-making tools, increased customizability and a variety of other enhancements. The price remains \$395, with upgrades priced at \$75. □

Orange Micro buys AST's Apple line

Anaheim, Calif. — Orange Micro Inc. announced last week that it has acquired the Mac product line of AST Research Inc. of Irvine, Calif. Orange Micro acquires Alive!, the Mac II video board AST called Nu-View; an NTSC video converter; Mac86 and Mac286 MS-DOS coprocessors; and ICP (Intelligent Communications Processor) for A/UX. □

NEWSPAPER SECOND CLASS

No other hard drive stacks up to Jasmine.

Year after year, Jasmine has set the standards by which other hard disk drives are compared.

Now, in 1989, we've raised those standards. With a new series of DirectDrives™ that are more reliable, affordable, and technologically advanced than ever.

DirectDrive 20	\$549
DirectDrive 40	\$699
DirectDrive 80	\$999
DirectDrive 100	\$1199
DirectDrive 140	\$1499
DirectDrive 300	\$2795

Of course, while continually pushing the boundaries of technology, we've never forgotten that there are some things technology alone can't provide. Like the joy of spending not a penny more than necessary to acquire the very best. Or the satisfaction of owning a hard-working, reliable piece of hardware. Or the feeling of confidence that comes from dealing with a company dedicated to customer service.

So it's only to be expected that this new series of external hard disk drives gives you more than more megabytes for your money. With each 1989 DirectDrive you also receive our exclusive, 30-day money-back guarantee and no-nonsense, two-year warranty.

But that's not all. Jasmine DirectDrives come bundled with over \$500 worth of the most advanced utility software available—absolutely free. Including Symantec™ Utilities for Macintosh, which lets you recover data from a mistakenly-initialized hard disk. Redux™ from Microseeds, perhaps the easiest, most powerful way to back up your data. DriveWare™ and DEScripter™, our comprehensive operating and proprietary encryption tools.* Plus DemoWare™ and over 5MB of Public Domain and Shareware software.

To order a new DirectDrive call 1-800-347-3228 in the U.S. or 1-415-282-1111 worldwide. Our knowledgeable staff is ready to answer your questions Monday through Friday from 8 am to 6 pm (Pacific Standard Time). MasterCard, Visa, or American Express cheerfully accepted.



 **Jasmine**
1-800-347-3228

Robots land in Atlanta; sponsor flooded with leads

By Eric J. Adams

Atlanta — Even though the robot pictured below isn't from outer space, it drew record crowds at the PITTCON trade show for laboratory and research scientists held here last month.

The robot, which has a 1-Mbyte Mac SE for a brain, was one of four such androids stationed at the booth of McGraw Park, Ill.-based Sartorius Instruments, maker of microbalances for scientific purposes.

With roving eyes and a digitized voice, each android invited showgoers to click the mouse atop the robots' heads to start an animated VideoWorks Interactive presentation lauding the benefits of Sartorius' precision instruments. The program was designed by Animatrix Inc. of Palo Alto, Calif., and the 4-foot-tall fiberglass robots were designed by Menagerie Productions, a San Francisco-based company specializing in visual effects.

The owner of Menagerie, Tony Mcvey, helped to design many of the robots in the popular film, "Return of the Jedi."

The robots garnered a record 5,100 sales leads for Sartorius. "The idea was to get people intrigued so that sales representatives could talk to them," said Rich Koch, representative for Robert LaPointe & Co. of San Francisco, the advertising and public relations company that concocted the robot campaign.

The robots will next touch down at shows in the Orient and Europe. But before long, Koch guaranteed, they will once again materialize at trade shows on American soil. □



This robot, with a Mac SE for a brain, garnered more sales leads at the recent PITTCON trade show than human beings have in the past.

StuffIt goes commercial; Aladdin to publish Lau works

By Emily Brower

New York — A small New York developer has announced that it will publish a commercial version of StuffIt, the shareware data compression and archiving program widely used among Mac owners to speed electronic file transfers.

The new version, to be called StuffIt Deluxe, will have a new interface aimed at novice users, with menu items for every function. According to David Schargel, president of Aladdin, it will also include new features that let users drag files in and out of StuffIt folders, cut and paste archive directories, and view archived files in several new ways.

Aladdin has not announced prices or ship dates for StuffIt Deluxe. According to Schargel, the company will continue to release

upgrades to the shareware version, in addition to offering registered StuffIt users the chance to upgrade to StuffIt Deluxe for about \$25. He said that shareware versions of StuffIt will be able to decompress an archive from any commercial version of the program.

StuffIt programmer Raymond Lau, who was 16 when he wrote the program's first release, decided on a publishing deal with Aladdin because he plans to attend college next year and won't have time to support his software.

Aladdin Software will also publish ShortCut, a file and folder utility by Lau. The company has publishing rights for all current and future versions of Lau's software.

Aladdin Software is located at 217 E. 86th St., Suite 153, New York, N.Y. 10028; (212) 410-3080. □

News



14 **Award-winning daily prizes Mac database:** The Anchorage Daily News used a 4D system to track information for a Pulitzer-winning series.

4 Typesetting giants keyed into Macs at Type-X show

5 Dial-back security feature added to Liaison 2.0

6 New Era targets schools with multimedia projects

14 **MacInTouch**

GateKeeper is a virus-detecting gumshoe that logs system activity.

16 Conference gave Mac CD-ROM users more choices

18 Mactivator powers remote Macs by phone

20 **StackWEEK**

Two new Apple tool kit discs for HyperCard developers debut at CD-ROM Conference — HyperSource, CD Audio Toolkit.

21 WaveMetrics' Igor ups the ante in the charting field

22 Hertzfeld at work on a home entertainment system

23 Solutions to put out improved SuperGlue

Opinion

24 **Editorial**

It may be time to leave behind the maverick anti-corporate perception of the Mac, but let's keep the spirit that inspired early Mac developers.

24 **Letters**

24 **Mac Soapbox** James Kolmbach

Outdated readability formulas can create more problems than they solve. A better solution could come from the development of a new generation of style checkers driven by natural language parsers.

62 **Mac the Knife**

Organizational Mac



28 **The end is in sight for high printer costs:** A new generation of compatibility kits gives Mac users access to Hewlett-Packard printers.

30 **Net Results** Peter Lisker

Looking toward the next wave in networking.

Window On

32 Work groups need sophisticated CAD features

34 Electronic design requires special CAD programs

34 **The Art of the Possible** Steve Rosenthal

How far can you stretch the Mac OS before it breaks?

Reviews

38 MacWrite reborn; Version II meets users' demands



40 **PixelPaint now does more than look good:** Upgrade provides professional color printing.

42 pcMACTERM, MacChuck offer remote control of PCs

Business Watch



57 **Analysts call MACdex a dud:** Exhibitors grumbled in aftermath of poor showing at Chicago's MACdex; analysts' predictions bleak.

58 Developers decry use of software patents

59 Pros and cons debated at patent protection forum

60 PC market open to Microsoft Windows

60 **MarketWEEK**

Apple's shares up 10 percent following strong market demand for Mac IIcx, the company's opening round victory in look-and-feel suit and a buy recommendation from First Boston.

45 Mail Order

46 Ad Showcase

49 Ad Index

50 Classified

55 Career Opportunities

Type-X show displays Mac's firm foothold

Maturity of PostScript, Mac market is evident

By Steve Hannaford

Philadelphia — If the sheer number of Macintoshes on exhibit is any indicator, this year's Type-X show, held here April 6-8, showed how deeply entrenched in the typesetting world the Mac has become.

The annual Type-X exhibition was combined with two other shows, Art-X, a graphic design show originally spun off from Type-X, and Printing Expo, a major trade show. Together they attracted more than 20,000 design and print professionals.

And in both the Type-X and Art-X sections, virtually every booth had a Macintosh, in most cases running serious design software or driving a typesetting device.

A roll call of the giants and the up-and-comers in the typesetting market — Linotype, Electra, Varityper/Tegra, Agfa/Computographic, Monotype, BirmySetter, ECRM, DTI and Autologic — put real PostScript imaging capability, both from Adobe and from clones, on display.

In contrast to previous shows in this field, many of the products being shown were actually released and available. All in all, the maturity of both the Mac and the PostScript market was clearly demonstrated.

Notable by their lack of prominence were Apple and Adobe. Apple had a minuscule presence and nothing very special on display. Its booth, staffed by local personnel, was "hiding in the shadows," as show attendee Dave Buell, a PostScript service bureau manager, remarked.

Adobe didn't show up at all, much to the chagrin of Frank Romano, show organizer and editor of TypeWorld magazine, who speculated that "Adobe is too brain dead to come. It's been spending too much time programming in PostScript."

Bedford Computer of Londonderry, N.H., for the first time showed off a Mac user interface version of its A/UX-based Professional Publishing System. The program, which the company said will ship by late summer, has all the typesetting and page-layout power of Bedford's standard Unix product, which is available on the Mac, Sun and other platforms.

"As far as we know, this the first A/UX [product with a] Mac-like interface shown," said company President Walter A. Alderman Jr. Bedford's big problem, the company said, is that the release date of Version 1.1 of A/UX, which the large-scale high-end publishing software requires, has continued to slip.

A clear sign of the Mac's progress was the news that Berthold, a German type company known for its conservatism, has gone Macintosh, at least a little. The company is offering

a \$2,000, 35-floppy library of 400 fonts for the Mac called BertholdLayoutTypes. The comp-quality typefaces can be printed on the LaserWriter but are intended mainly for use in files to be output on the non-PostScript Berthold M Series imagesetters.

Among the other companies exhibiting Mac products at the Type-X show were:

► Lincoln Software of Concord, Mass., which unveiled PS-Tutor/Mac, a PostScript screen interpreter that runs on Mac SEs and IIs. This product, a tool for programmers and PostScript students, generates PostScript output pages on the Mac. Users can create, load and modify PostScript programs and see on-screen how the page image will look.

► Pipeline Associates of West Orange, N.J., which showed its CSM (color separation module) software on the Mac, running with the Nikon LS-3500 35mm color scanner. This CSM module is a software library that any OEM can license and incorporate into its software to do four-color CMYK (cyan, magenta, yellow, black) separations.

The modules take RGB (red, green, blue) data and change it into CMYK data. The software also performs under-color removal, color correction and gray-scale balancing. The software is now available for licensing. □

The essential Macintosh word processor.



Like its phenomenally successful predecessor, MacWrite II is uncomplicated, graphic and easy to understand.

DASnet gets file transfer

Campbell, Calif. — DA Systems Inc. has added a binary file transfer feature to its internetwork communications service, allowing DASnet subscribers to exchange formatted documents and graphic files.

The new feature will allow DASnet subscribers to send Mac files through most major electronic-mail services, including AT&T Mail, Bix, Connect, EasyLink, MCI Mail, The Source, The WELL and UUCP.

DA Systems is at 1503 E. Campbell Ave., Campbell, Calif. 95008; (408) 559-7434. □

Liaison 2.0 software bridge adds dial-back security

By Richard Rawles

Portland, Ore. — After adding new features that let remote users dial in to networks without jeopardizing security, Infosphere this

month began shipping Version 2.0 of Liaison, its software-only AppleTalk bridge.

Among several new security features, the upgrade includes a dial-back option designed

to ensure that only callers from an authorized number can log on to the host network.

Liaison, which runs in the background on either a server or a networked workstation, provides both local bridging and remote dial-in services. Locally, it can be used to break an AppleTalk network into smaller and more efficient zones or to link a LocalTalk or twisted-pair AppleTalk network to an Ethernet backbone. For remote use the package includes a Liaisonet module that can be distributed to an unlimited number of users who may wish to log on to a Liaison-equipped network.

"It's a very elegant solution," said Gene Ledbetter, engineering section head at Proctor & Gamble's paper division in Cincinnati.

Evan Solley, president of Infosphere, said the security features added to this month's free upgrade are what separate the \$295 program from hardware-based remote-access products such as Shiva Corp.'s TeleBridge and Solana Electronics' R-Server.

In addition to the user-identification and password-encryption features built into the original release, Liaison 2.0 adds:

► Dial-back authentication, so the host-site computer first validates a user's password and then calls the remote computer back.

► Up to three designated "hidden" zones on a network, effectively blocking access to security-sensitive areas of a company such as R&D or payroll.

► Automatic call logging, which permits detection of repeated intrusion attempts. The program records extensive information about all access attempts in a tab-delimited text file.

"Hardware devices are constrained in the amount of nonvolatile memory they can have," said Solley, and are thus restricted in how much data they can store. In contrast, he said, using "the Mac [as a bridge] offers unlimited amounts of security information."

A new network statistics feature provides extensive real-time information about an internet. "It's designed to let a network administrator determine where heavy traffic is" to help in establishing zones and locating bridges, according to Eric Gould, marketing agent for Infosphere.

Version 2.0 also adds compatibility with FlashTalk, the AppleTalk acceleration system from TOPS of Alameda, Calif.

John Webster, director of audio-visual services at the University of New Brunswick in Fredericton, said that about 30 people on and off campus use Liaison and Northern Telecom's DataPath 19.2-Kbyte "digital" modem to form ad hoc work groups. The solution is much more flexible than a hard-wired LAN would be, he said. "With Liaison, we can reach out into the world while still maintaining the Mac user interface."

Although Liaison provides network-to-network communications, it can't do so with net modems, said Dan Mallin, head of Macintosh support at 3M in St. Paul, Minn. "They do some things with the modem port that just can't be done across AppleTalk," he said.

Infosphere is located at 4730 S.W. Macadam Ave., Portland, Ore. 97201; (503) 226-3620; (800) 445-7085. □

Now has all the essentials.



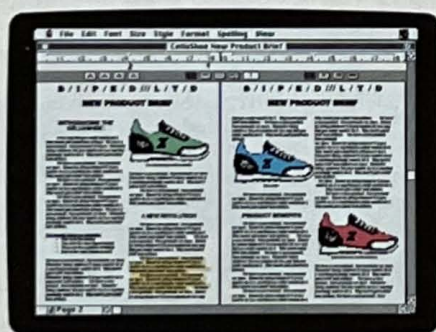
MacWrite II turns your writing into publishing. With up to ten columns, adjustable line spacing and the ability to crop and scale graphics.

MacWrite II gives you font control you must see to believe (2 to 500 points). Plus footnotes that number themselves.

Mail merge makes it simple to send one personal letter to a million close friends. And create custom stationery templates to use over and over.



The only thing more impressive than our new HyperCard-style Claris Help feature is how seldom you'll need to use it.



Keep more than one document open. Edit and preview your pages before you print them. And import color graphics.



Add frequently used styles to your menus and turn them on and off with keyboard commands.



An amazingly fast 100,000-word dictionary checks and corrects your spelling in a flash. MacWrite II includes a desk-accessory thesaurus, too.



A good leader must be a good communicator. So MacWrite II reads and writes directly to all these word processing formats.

Introducing MacWrite II. CLARIS®

Witches Market meets multimedia

New Era targets education market

By Connie Guglielmo

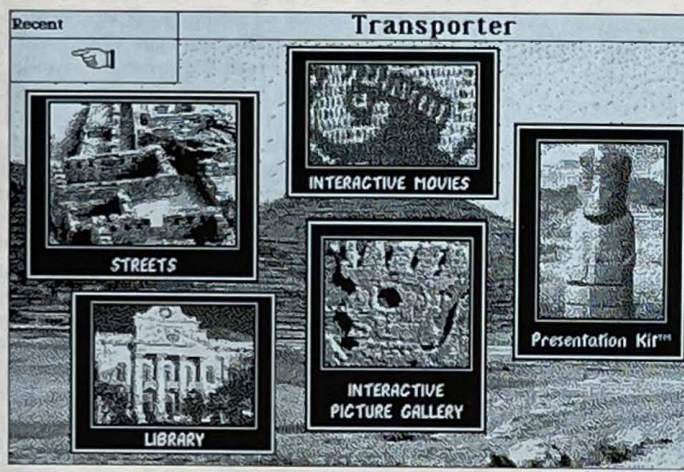
Miami — The sights and sounds of the Witches Market, an age-old open-air marketplace in La Paz, Bolivia, have been brought to life on the Macintosh in an interactive multimedia presentation created by Miami-based New Era Video Inc.

The Bolivia Hypermedia Expedition, the result of two years of work, is the first in a series of hypermedia learning systems that New Era Video plans to release for the education market, according to Sherman Sall, co-founder of the video production and software development company.

The expedition takes Mac users on a tour of the Witches Market, including close-up visits with local merchants, and provides an interactive database of words and pictures about the life — including language, customs, history, art and religion — of the Aymara and Quechua Indians of Bolivia.

Most key words are hypertext, which means users can click on a word to see more information, ranging from a definition to bibliographic references, Sall said.

The \$500 package, to ship this month, is a HyperCard-based software system and a videodisc filled



The Bolivia Hypermedia Expedition takes Mac users on an interactive tour of the Witches Market in La Paz, Bolivia. The videodisc presentation contains video, photographs and maps.

with digital audio recordings and more than 10,000 images, including interactive documentaries, photographs and maps. In addition to shooting all its own video and creating the content, New Era developed custom search tools, context-sensitive on-line help and the Electronic Notebook, a feature that lets users cut clippings of the presentation into a personal scrapbook.

The system also includes Presentation Kit, a set of HyperCard tools for formatting and organizing video and still images on a videodisc. According to Nathaniel Schwartz, a

programmer for New Video, there are tools for marking the beginning and ending of video clips and for defining how each selection will be used in custom interactive presentations put together by the user.

The company also plans to sell the Presentation Kit as a stand-alone program for \$149.

Sall said the Bolivia Expedition is a prototype for the company's learning systems. Since its HyperCard development work has been done, the company will focus on content and on developing courseware for teachers. "This is not about the technology. This is about delivering engaging programming that is affordable to schools," he said.

New Era's next project, called Coral Reef Odyssey: A HyperMedia Expedition, is a diving journey of the coral reefs of the tropical Atlantic featuring video clips and photographs shot underwater. The images will be linked to an interactive database containing marine life information, Sall said.

New Era Video Inc. is located at 5894 S.W. 42nd St., Miami, Fla. 33155; (305) 663-9451. □

WP capabilities reach 4D

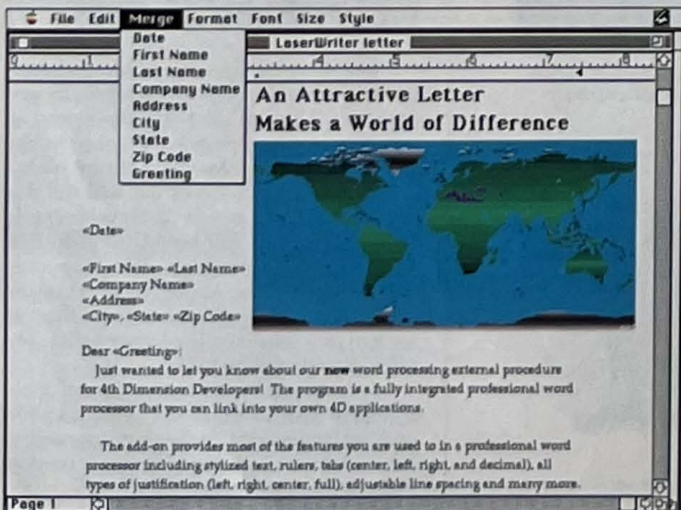
Palo Alto, Calif. — Metropolis Software Inc., a company that has previously focused on real estate applications built with 4th Dimension, has announced a set of external procedures that give the ACIUS database program MacWrite-like word processing capabilities.

The \$179 add-on will let users compose letters without leaving 4D, then easily merge the copy with information from their databases. The program will sup-

port multiple fonts, sizes and styles for text and a range of tab types and alignment options.

Targeted at corporate and commercial developers, consultants and power users, the program is now available, although it is still unnamed. Last-minute legal issues forced Metropolis to drop the name it had planned to use, 4D Write.

Metropolis Software Inc. is at 499 Hamilton Ave., Suite 202, Palo Alto, Calif. 94301; (415) 322-2001. □



Available now, Metropolis Software's as-yet-unnamed program, priced at \$179, lets users write letters in ACIUS' 4D, then merge the copy with information from the database.

Film recorder vendors to add PostScript output

By Cliff Lehman

Philadelphia — Two competitors in the Mac film recorder market this month revealed solutions to the challenge of PostScript output that are as different in price as they are in technology.

► Presentation Technologies Inc. announced an agreement with Custom Applications Inc. to cooperate in marketing a Mac version of CAI's software-only PostScript-clone interpreter, which will work with Presentation's Montage Model FR1 film recorder.

► Agfa Matrix Instruments will use a stand-alone hardware device to give its line of film recorders PostScript capability. The RIP, built around an Atlas controller from Adobe Systems Inc. with a 68020 CPU, 6 Mbytes of RAM and an 80-Mbyte hard disk, will be priced at a whopping \$17,900.

CAI's interpreter, Freedom of Press, resides in software on a host computer. A version for MS-DOS machines has been available since September 1988.

The Macintosh version will require a Mac II with 2 Mbytes of RAM. The program costs \$495 for DOS machines and will be in the same price range for the Macintosh, according to a CAI representative. The Montage FR1, now priced at \$5,995, will cost approximately \$6,500 when combined with Freedom of Press.

The Freedom of Press interpreter will provide output on a variety of devices, including dot matrix printers, in both color and black and white, he said. CAI plans to ship the Mac version in August.

Montage/Freedom of Press users will sacrifice some convenience in exchange for the cost savings. The program requires users to print files to disk, quit their program, open Freedom of Press, then go through several additional steps before the files are printed.

The Matrix system will include a Chooser-level driver. Users can simply print to a Matrix film recorder, such as the SlideWriter, as they would any output device.

The unit will be compatible with any of Matrix's family of film recorders, including QCR-Zs, SlideWriters, PCRs and ProColors, although the latter three may have to be upgraded if manufactured before January 1988.

Custom Applications Inc. is located at 900 Middlesex Turnpike, Building 5, Billerica, Mass. 01821; (508) 667-8585. Presentation Technologies Inc. is located at 743 N. Pastoria Drive, Sunnyvale, Calif. 94086; (408) 749-1959.

Agfa Matrix is located at 1 Ramland Road, Orangeburg, N.Y. 10962; (914) 365-0190. □

MacWEEK

Publisher Michael Tchong

EDITORIAL

Editor Daniel Ruby

Executive Editor Daniel Farber

Managing Editor Brenda Benner

Section Editors Henry Norr (News), Bernard Ohanian (Opinion, Features), Rochelle Garner (Organizational Mac, Window On), Rebecca Waring (Reviews), Anita Malmig (GA)

Editor at Large Dale Coleman

Technical Editor Ric Ford (Boston)

Senior Writers Connie Guglielmo, Rick LePage (Boston)

Associate Editors Eric J. Adams (News), Richard Rawles (Window On)

Information Director Emily Brower

Staff Reporters John Battelle, Elinor Craig, Cliff Lehman, Jonathan Perrow, Pamela Piffner, Jonathan Swartz

Assistant Editors Stephen Howard (Reviews), Suzanne Weber (Features)

Copy Editors Charles Lenatti (Copy Chief), Carolyn Said (Desktop Publishing Chief), Janice Maloney, Sue Troy, Mitz Waltz

Contributing Editors Eric Alderman, Don Crabbs, Vernon Keenan, Dennis Klatzkin, Peter Lisker, Jonathan Littman, Steve Michel, Steve Rosenthal, Ezra Shapiro, Laslo Vespremi

ART AND PRODUCTION

Associate Publisher Manufacturing Barri Klingaman

Art Director Eleanor Leishman

Associate Art Director Laura Stoll

Designer Gary Suen

Photo Editor Jonathan Hornstein

Production Supervisor Carolyn Bealman West

Graphics Technicians Henri Froissart, Rick Valdez

Graphic Artist Tamara Gargus

Ad Production Manager Debra Di Blasi

Ad Coordinator Michelle Gargus

MARKETING

Associate Publisher Ted Welch

Advertising Managers Nancy Carter, Jeff Cohen, Jane Fitzwilliam, Michael Lamattina, Bill Peck, Peter Stangel

Account Executives Carla Daiss, Leslie Hupp, Kathy Kottenbach, Erwin Morata, JoAnn Sturridge, Deborah Tarantino

Advertising Administrator Mary Stepp

Advertising Sales Coordinator Anne Nichols

Senior Circulation Manager Agnes Vaneek

Circulation Coordinator Georganne Stohr

Promotion Director Cynthia Ahiart

Research Director Griffin Dix

Promotion and Research Coordinator Caroline Kwok

Business Manager Karen Braanan

Administrative Assistants Jennifer Ambrulevich, Elizabeth Carney, Chris Vyhalek

COASTAL ASSOCIATES PUBLISHING

President Kenneth H. Koppel

Vice President J. Scott Briggs

Vice President William Lohse

Vice President Controller John Vlachos

Vice President Operations Baird Davis

Treasurer William Phillips

Secretary J. Malcolm Morris

Editorial and advertising offices: 301 Howard St., 15th Floor, San Francisco, Calif. 94105; (415) 243-3500. Boston editorial office: 4 Cambridge Center, Third Floor, Cambridge, Mass. 02142; (617) 497-2600.

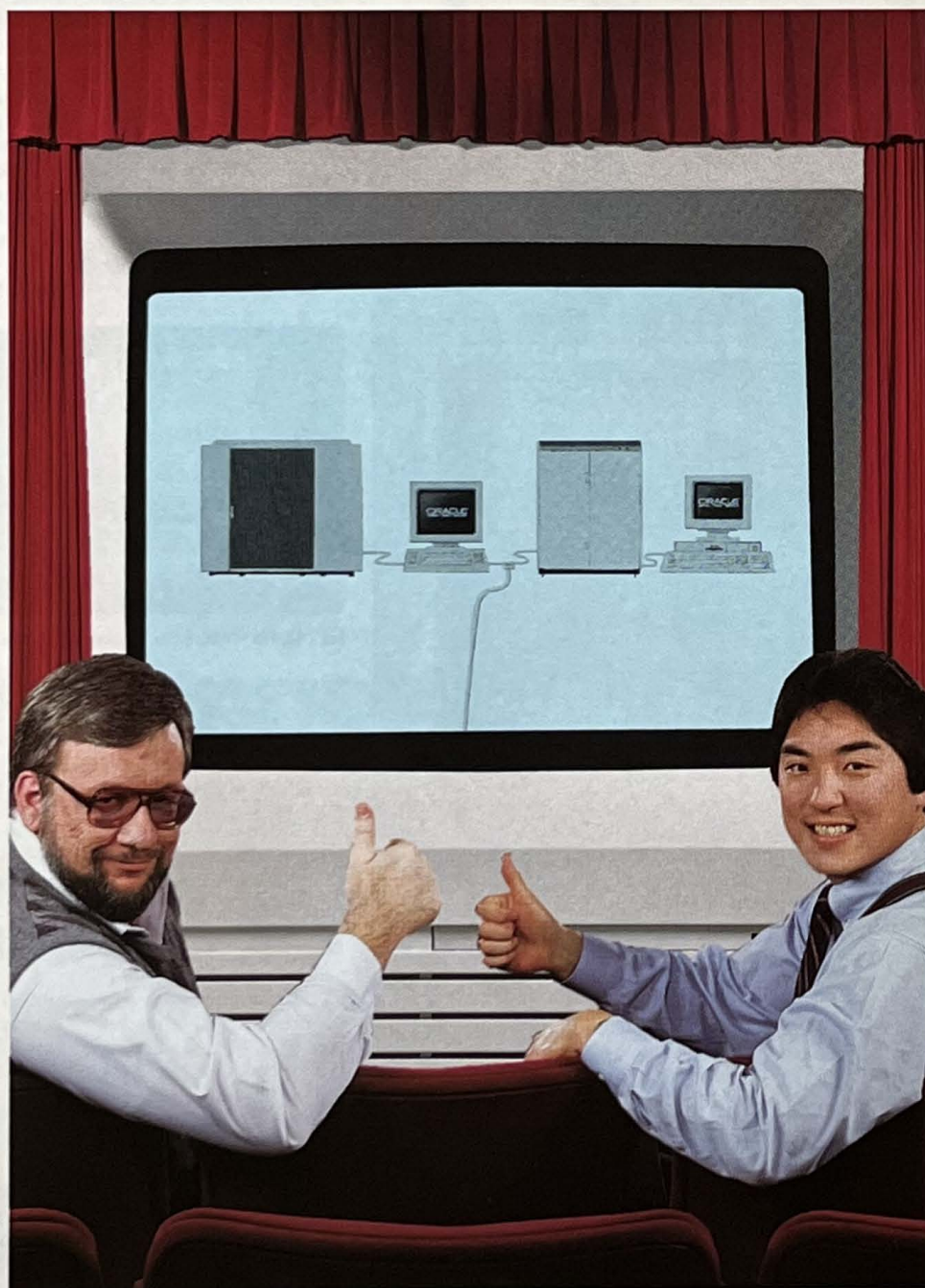
MacWEEK (ISSN 0892-8118) is published weekly, except for two weeks at year-end, by Coastal Associates Publishing, L.P., One Park Ave., New York, N.Y. 10016. Single copy price including postage: \$5. One-year subscription rate: U.S. \$75, Canada/Mexico U.S. \$150, International U.S. \$300 (airmail). All orders must be prepaid. Direct subscription inquiries to Customer Service Department, MacWEEK, P.O. Box 5821, Cherry Hill, N.J. 08034; (609) 428-5000.

Changes of address require that a new application be filled out completely and include both new and old address. Allow 4-6 weeks for processing. Postmaster: Send address changes to MacWEEK, P.O. Box 5806, Cherry Hill, N.J. 08034. Second-class postage paid at San Francisco and additional mailing offices.

MacWEEK is an independent journal, not affiliated with Apple Computer Inc. Apple and Macintosh are trademarks of Apple Computer Inc. Entire contents copyright 1989 Coastal Associates Publishing, L.P. All rights reserved. Material in this publication may not be reproduced in any form without permission. Request for permission should be directed to Jean Lamensdorf, Licensing Director, One Park Ave., New York, N.Y. 10016. MacWEEK

"Two thumbs up!" ORACLE for Macintosh. For only \$199 until May 31.*

**LIMITED
TIME OFFER:**
Purchase ORACLE for Macintosh
Networking Version and receive
ORACLE for 4th DIMENSION FREE!



"I like the seamless way ORACLE gives HyperCard full-power database and networking capabilities. Teaming the total flexibility of HyperCard with the strength of SQL is a masterstroke!"

Dan Shafer, Author of Hypertalk Programming

"I like the seamless way ORACLE opens up minis and mainframes to 4th DIMENSION. Teaming the total flexibility and strength of 4th DIMENSION with SQL is a masterstroke, indeed."

Guy Kawasaki, President of ACIUS, developers of 4th DIMENSION

Finally, there's one thing these two guys can agree on: ORACLE® for Macintosh. That's because ORACLE for Macintosh now turns both HyperCard and 4th DIMENSION into full-function SQL databases. It also gives them transparent connectivity to over 80 different systems, including PCs, DEC VAXs and IBM mainframes—even IBM DB2 and SQL/DS databases.

No-Risk 30-Day Money-Back Guarantee

Whatever application you're currently using—HyperCard or 4th DIMENSION—ORACLE for Macintosh gives you industry-standard SQL. \$199* delivers the first and only SQL database available for the Mac. An additional \$199 lets you access ORACLE from 4th DIMENSION. Or for a limited time, \$999** delivers all this, plus transparent access to remote ORACLE and IBM databases on your host systems. So call today. Our 30-day money-back guarantee is your assurance we'll deliver a four-star performance.

ORACLE®

COMPATIBILITY • PORTABILITY • CONNECTABILITY

Call 1-800-ORACLE1, ext. 7735 today.



Dear Oracle Macintosh Direct Sales
20 Davis Dr. • Belmont, CA 94002 • 1-800-ORACLE1, ext. 7735

I have (check one) ☐ HyperCard 1.2 ☐ 4th DIMENSION Version 1.0.6.
Enclosed is my ☐ check, or ☐ VISA ☐ MasterCard ☐ AmEx credit card
authorization for:

- ☐ × \$199 ORACLE for Macintosh Developer's Version \$ _____
(Includes HyperCard Interface. \$299 after May 31, 1989.)
- ☐ × \$199 ORACLE for 4th DIMENSION \$ _____
Available June 1989. (Requires ORACLE for Macintosh
and 4th DIMENSION.)
- ☐ × \$999 ORACLE for Macintosh Networking Version \$ _____
(Includes an unrestricted license of ORACLE for Macintosh,
SQL*Net Networking Software and protocols for Macintosh
and, for a limited time, ORACLE for 4th DIMENSION.)

Please add appropriate sales tax \$ _____

Shipping and handling \$ 15

Total (Offer valid only in USA) \$ _____

NAME _____ TITLE _____

COMPANY _____

STREET (no P.O. boxes, please) _____

CITY _____ STATE _____ ZIP _____

TELEPHONE _____

CREDIT CARD NO. _____ CARD EXPIRATION DATE _____

SIGNATURE _____ TODAY'S DATE _____ MAC WEEK _____

*Price becomes \$299 after May 31, 1989. Stand-alone version licensed for developers only. Requires Macintosh SE or II with 2 MB of RAM, 5 MB hard disk space, floppy disk drive, and HyperCard 1.2. Includes 30-day installation support, ORACLE database, Hyper-SQL (HyperCard Interface), SQL*Plus, OCI and Pro-C (Macintosh Programmer's Workshop required for programming usage), System Stacks and Example Stacks. **Full networking version is \$999 and includes SQL*Net (for database communications), Async, DECnet, TCP/IP support, Alisa System's TSSnet DECnet protocol and drivers and Kinetic's TCP/IP protocol and driver. Accessing database software on other machines requires a separate protocol handler and gateway software for the other machine. Call for additional information. Copyright © 1989 by Oracle Corporation. ORACLE is a registered trademark of Oracle. The other companies mentioned own numerous trademarks. TR8A

MACdex

Continued from Page 1

high school show for that matter," said Nat Goldhaber, the co-founder of TOPS and the Cole Gilburne Fund, who was on hand to moderate a panel discussion on Macintosh networking. "I am very skeptical that I will participate in a seminar here again unless it is part of Comdex itself."

Despite the poor showing, Interface Group Chairman Sheldon Adelson said that the company would follow through with plans for a second MACdex this November

in Las Vegas, and also announced plans to hold a third show next June in Atlanta.

"A seed has been planted," Adelson said. "With the right nourishment, care and attention, MACdex will grow and could one day approach the success of Comdex."

Adelson attributed the poor vendor response to Apple's decision not to participate. "Everything would have been different if Apple had come in," he said.

Apple's no-show may have been prompted by its displeasure at The Interface Group's decision to segregate Macintosh products

from the rest of the industry. "The idea of highlighting Macintosh developers is good, but the implementation by The Interface Group was very confusing," said an Apple official, who requested anonymity.

While MACdex produced no blockbuster announcements, several Comdex exhibitors introduced significant Mac products (see related story, Page 57).

► Fujitsu America of San Jose, Calif., made its debut in the Mac market with the RX100PS+, a \$4,995 4-Mbyte PostScript laser printer due in June.

► Panasonic introduced the EPL-8541, a \$9,500 wax-transfer thermal color printer with variable dot size, dithering and a direct RGB (red, green, blue) interface.

► Timeworks of Deerfield, Ill., introduced Publish It!, a \$395 Macintosh version of its MS-DOS desktop publishing program.

► Xerox demonstrated a Macintosh interface for its 7650 Pro Imager scanner. The 256-gray-level scanner will be available next month for less than \$10,000.

The Triple Crown of April Mac shows continues this week with the Macintosh Business Conference in New York and the week after with Macworld Expo in Washington. □

Looking into CAD?

See how VersaCAD on the Macintosh stacks up . . .

When it comes to professional CAD on the Macintosh®, only VersaCAD® offers a complete solution. Now in its fourth release, this bestselling software gives you high-precision color graphics . . . plus unique design capabilities based on Apple Computer's HyperCard™ information management tool.

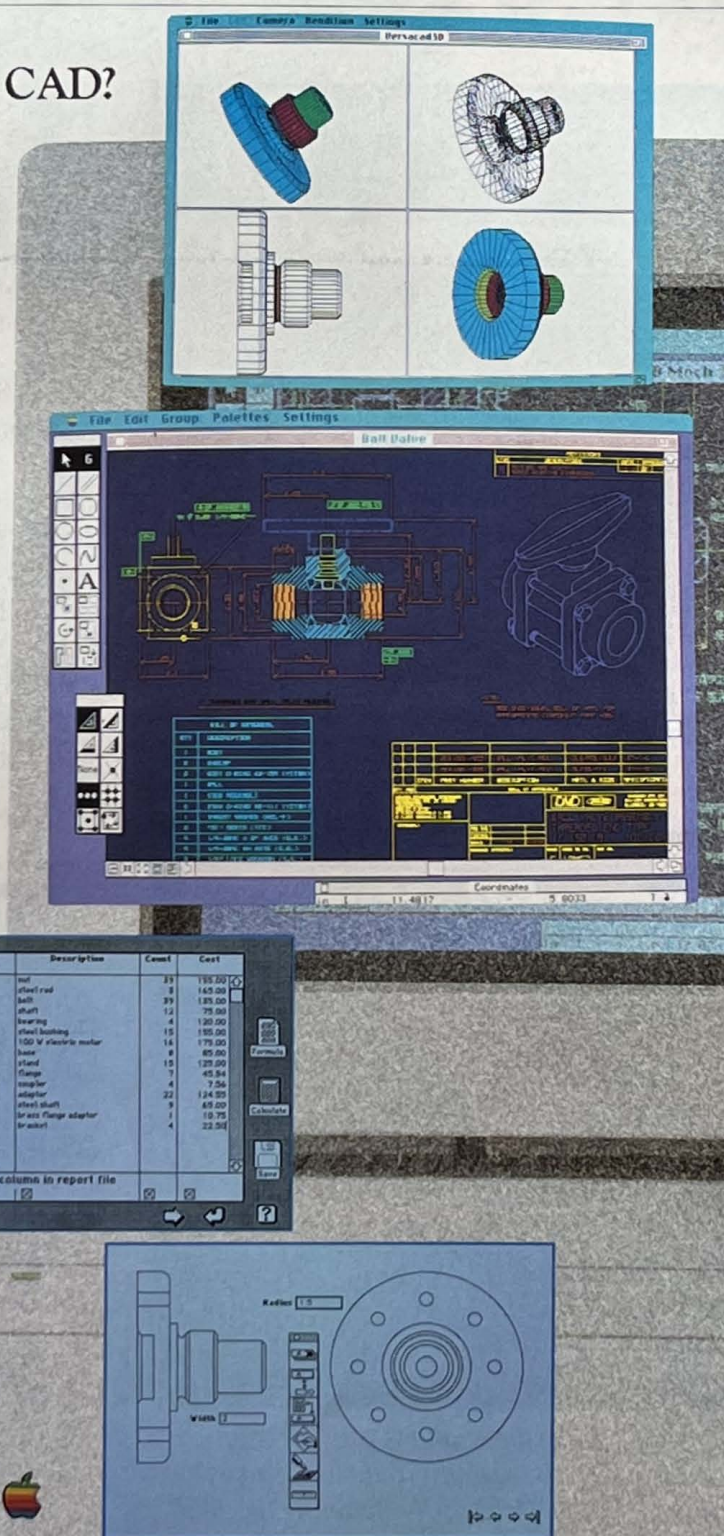
- 2D drafting rated "Best" at the National Computer Graphics Association shootout
- 3D color shading that's fast and easy, including multiple viewport display
- Exclusive HyperCard stacks for:
 - Bill of materials
 - Parametric design
 - Off-line plotting
 - Attribute database
 - CAD text processor
 - Drawing manager, and more.
- Proven two-way links to PC-CAD, workstations and thousands of productivity programs.

See for yourself how VersaCAD stacks up. Return the coupon for a free demo disk or call (714) 960-7720 today.

VERSACAD®



Prime
Personal CAD/CAM



YES, send me a free demo disk (requires a Macintosh Plus or greater).

Name _____
Title _____
Company _____
Address _____
City/State/Zip _____
Phone _____

Please send to Demo Disk, Versacad Corporation, 2124 Main Street, Huntington Beach, CA 92648.

McW 4/18/89

Sun

Continued from Page 1

Apple's high-end Macintosh or IBM's 80386-based machines, according to Andy Bechtolsheim, designer of the Sun machine and one of the company's founders.

The SPARCstation 1 includes three SBus expansion slots and built-in Ethernet. The motherboard is equipped with eight-bit Integrated Services Digital Network (ISDN)-compatible audio input/output.

"In terms of functionality and quality, [the



Sun's \$8,995 SPARCstation 1 executes 12.5 mips.

SPARCstation 1] is the first machine that not only merges the PC and the workstation, but beyond that merges the personal computer and the mainframe," said Bechtolsheim.

Despite a price/performance balance that tips in Sun's direction, analysts said that the low-end workstations will not necessarily erode Apple's market share, at least not yet. "Sun sells cheaper machines to those who want engineering workstations, and Apple is selling more-expensive machines for general productivity," said Stewart Alsop, publisher and editor of P.C. Letter.

Although he sees some competition in the desktop publishing market, Dataquest Unix analyst Paul Cabbage said, "It will take a year or two for applications to migrate before we see some clash."

Sun's most inexpensive machine, the 3-mips 3/80, starts at \$5,995, putting it in the same range as the Mac IIcx, Sun said.

Designed by Frogdesign — designer of the Mac and NeXT machines — both low-end Sun machines come in a flat beige box the size of a pizza carton. They include IBM-compatible disk drives for DOS emulation.

Sun also introduced the Sun 300 series of high-end SPARC workstations with twice the performance of the SPARCstation 1, as well as the Sun 3/470, a 68030-based machine running at 7 mips.

Sun also premiered a new eight-bit color graphics accelerator GX card for its low-end machines and a 24-bit GXP accelerator for its high-end machines. A new full-motion video board, putting real-time images of the crowd in a SPARCstation 370 window, entertained the audience. The board, which does not run on the SPARCstation 1 or Sun 3/80, supports a range of I/O formats, including VHS, CAM corder, and cable TV. □

MacObject *Continued from Page 1*
enjoined a recent article in Apple Direct, a monthly newsletter from Apple's developer services.

Developers polled by MacWEEK generally accepted the mandate as a necessary step toward improving the quality of software and reducing development time.

"The industry is moving in that direction — it's a good way to package complexity and remain competitive," said Scott Wiener, chief architect of word processing products for Ashton-Tate. "The downside is that object-oriented programming has a steep learning curve."

According to Charlie Oppenheimer, manager of Macintosh system software product marketing at Apple, the move to OOP is an evolutionary process that began with MacApp and HyperCard and will continue into the next decade.

"At some point in the next decade, we will have done enough so that all will be part of a unified whole; the Mac system software and object-oriented development tools will be indistinguishable from one another," Oppenheimer said.

Sources said the next-generation Mac operating system will likely be written in an object-oriented language.

In an interview with MacWEEK, Jim Davis, director of system soft-

ware at Apple, said the company is considering rewriting the Mac operating system kernel in C++, an OOP language developed by AT&T. Sources close to Apple said major parts of the new Finder are being written in C++. The version of MacApp available to third-party developers, however, does not yet support C++.

Although Apple officials declined to comment, sources said that the future development environment and operating system would diverge from the current Mac Toolbox and ROM. As a result, developers who want their applications to take full advantage of the new system's features will have to update their code. Apple reportedly intends to protect users' investments in existing applications by providing paths to migrate and run older applications under the future software architecture.

Apple is not the only company to recognize the potential of OOP to reduce program development time and offer more manageable, extensible code. The NeXT Computer System employs an object-oriented development environment, and Sun Microsystems is working on converting its software to C++. Microsoft Corp. has announced plans for Application Factory, an object-oriented development system for Presentation Manager. □

Apple bets on MacApp

In light of the industrywide focus on object-oriented programming (OOP), Apple is betting on MacApp, the company's object-oriented tool kit, to lead Mac developers into the object world.

Like other object-oriented tool kits, MacApp has its roots in Smalltalk and features an object/message framework, inheritance, classes and encapsulation.

"Object-oriented toolkits like MacApp allow programmers to reduce development time and manage large, complex applications more efficiently compared with procedure-oriented languages like Pascal and C," said Steve Burbeck, the MacApp product manager.

While the majority of Mac developers are still using procedural languages, MacApp is gradually winning converts, Burbeck said. It has been used to develop more than 30 commercial applications, including Read-It! optical character recognition (OCR) software from Olduvai, and Geo-Query, a geographical database from Odesta Corp.

Object-oriented languages may

be the wave of the future, but they will come at a price.

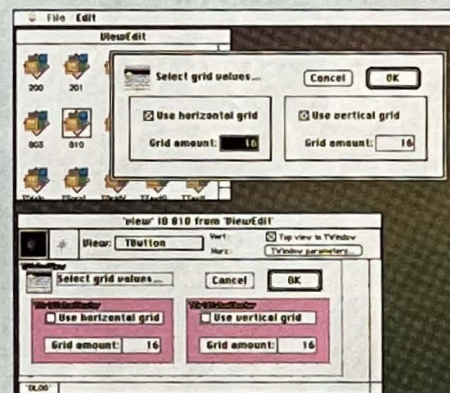
"The learning curve is tricky and can take several months," said Burbeck. "Programmers need to learn to think in terms of building objects and classes to model their application world rather than try to cram the application world into the few objects the computer already knows about."

MacApp's tool kit uses a minimum of code to implement the standard Mac interface. Fewer than 50 lines of Object Pascal source code in MacApp creates a small multiwindowing Mac application that would take more than 2,000 lines with a procedural language, said Scott Knaster, an engineer at Apple and author of How to Write Macintosh Software.

In its current state MacApp is not without shortcoming.

"MacApp is not a panacea," said Joel West of Palomar Software in Vista, Calif. "The development environment is slow compared with Think's Lightspeed C or Pascal. The payoff will be when Apple releases object-oriented toolboxes like NeXT's Interface Builder and a C++ implementation."

Version 2.0, which is still in beta form, does not support an object-oriented C language. Version 2.1 of MacApp, due later this year, will allow code from C++, an object-oriented C from AT&T, to interact directly with MacApp, Burbeck said. — *By Daniel Farber*



MacApp's ViewEdit utility allows programmers to visually edit view resources such as the dialog box shown here.

The \$20 Connection!



For only \$19.95 (68% less than PhoneNet™), our nodes come complete with illustrated manual, 10 feet of telephone wire and resistor, 30 day money-back guarantee and a lifetime warranty!

SPECIAL OFFER

Buy ten nodes and get:
free diskette full of Network and Printer Utilities valued at \$60.
\$100 worth of discounts for other network products.

NexSys

1-212-995-2224

VIEW+GRAB VIDEO IN REAL TIME.

With Scion's *Video Capture Board*, you can:
SEE IT in real time, not just capture it in real time.
GRAB IT and save it in TIFF format.
ALL IN REAL TIME, with point and click simplicity. Macintosh II compatibility without memory upgrades. *Introductory price:* from \$1195*, complete. Call (301) 845-4045.

Scion Corporation, 3 North Main Street,
Walkersville, MD 21793 *U.S. Price.

SCION
Video Capture Board



Clone

Continued from Page 1

company expects to offer its own reverse-engineered ROMs, Chen said.

Meanwhile, Powder Blue Computers Inc. showed its line of BlueMAQs, which combine Apple logic boards, additional circuitry and third-party components in IBM PC-style cases. The Salt Lake City company announced a new Heat Seeker model with a 68030 processor running at 20 MHz with 80-nanosecond RAM. The BlueMAQ II, a 68020-based system available in a variety of

configurations starting at \$4,799, and the \$7,499 BlueMAQ IIx, which offers an '030 processor, an 85-Mbyte drive, 4 Mbytes of RAM, a SuperDrive-like floppy drive and a gray-scale monitor, were also on display.

Several Apple officials, including at least one from the company's market intelligence unit, visited the Akkord booth here, which was crowded with interested dealers and users. "Clone activity of any kind is of concern, and Apple takes it seriously," an Apple source said.

A source close to Akkord said the compa-

ny's attorneys in Taiwan and the United States have assured it that it is so far on solid legal ground. Akkord does, however, anticipate a possible lawsuit based on Apple's "audio-visual copyrights" once the clone ROMs appear.

Akkord also demonstrated working prototypes of a \$2,500 Laptop Upgrade Kit, which will let users and dealers build a portable Mac around a logic board taken from an Apple-manufactured machine. The Akkord laptop, which the company said can accommodate the logic board of any Mac, even a

Mac II, will weigh in at about 12 pounds.

For Mac owners unwilling to disembowel a working Mac to complete the kit, Akkord officials noted that "there are ways of getting a motherboard for about \$700."

Once Akkord's clone ROMs become available, sources said, the company may offer its portable complete with a logic board. Chen did not rule out the possibility of also licensing the ROMs to third parties.

The Akkord clone was originally unveiled in West Germany last month under the name Jonathan (see MacWEEK, March 14). Current plans, however, call for it to be marketed simply as the Akkord, since the earlier name turned out to be registered to a European vendor of PC clones, sources said.

The desktop Akkord shown here included a 14-inch screen; built-in AppleTalk adapter; external and internal SCSI ports; a parallel printer port (a feature not available with standard Macs); a modem port; ADB (Apple Desktop Bus) connectors; 2 Mbytes of RAM; and an internal floppy drive.

Akkord's decision to sell the clone already equipped with ROMs purchased on the open market was apparently motivated by legal as well as marketing considerations. Sources said attorneys had advised the company that if Akkord were to require buyers to supply their own ROMs, it might be vulnerable to charges of enticing dealers to break their contracts with Apple by reselling the chips.

Legal concerns have also forced Akkord to drop plans for a diskless AppleTalk workstation. The original design called for a boot-up ROM that would download Mac ROM routines from a genuine Mac server. Attorneys, however, reportedly advised that such an approach might not be legally defensible.

Akkord applied two weeks ago for Taiwanese patents, copyrights and trademarks on the design of its clone and on several aspects of the machine's engineering, including chip sets it designed to emulate the Mac's AppleTalk circuitry and IWM floppy disk controller.

Under Taiwanese law, Apple has 30 days from the date of filing to contest the application. Observers predicted, however, that Apple will ignore the initial filing. Once the Taiwan authorities approve the applications, Akkord is expected to seek similar protection in the United States.

On the issue of system software, Chen noted that the license agreement for Apple's System and Finder, which allows users to make one copy of the software for their own use, does not explicitly require that the copy be used on a Mac. Apple's HyperCard license, however, does say that copies of the program are for use on Macintoshes only. □

Additional reporting by Emily Brower and Luc Kwanten.

At Leasametric, we stay on top of every Macintosh we rent.

With the most complete array of services anywhere—installation, a toll-free number for on-line diagnostics, short and long-term rentals, and both operating and finance leases. All tailored to your individual needs.

Leasametric lets you choose from one of the largest, most consistent nationwide inventories of Apple® computer products. Rent or lease the Macintosh® SE, with its advanced graphics and large storage capacity for memory-intensive applications like spreadsheets and databases. Or the high-performance Macintosh II, whose great speed and open architecture are ideal for advanced applications in business, science, engineering and desktop publishing.

There's the full family of LaserWriter® II printers as well—the indispensable desktop publishing tools with more type styles, better high-resolution graphics, and full networking capability.

And we have the Apple-compatible equipment you need for a multi-vendor network. Plus the support you need to keep any network in top condition. Comprehensive support—including on-site maintenance and return-to-depot programs—that's helped make us the nation's largest source for rental and leased computer equipment.

So the next time you need Apple products, call the people at the top for service and selection—the professionals at Leasametric.



Authorized
Value Added Reseller

LEASAMETRIC

Data Communications

Northwest: (800) 343-7368, (415) 574-5797 • Southwest: (800) 638-7854, (818) 708-2669 • Central: (800) 323-4823, (312) 595-2700
Northeast: (800) 221-0246, (201) 825-9000 • Southeast: (800) 241-5841, (404) 925-7980

© Leasametric, Inc. 1988. Apple, the Apple logo, Macintosh, and LaserWriter are registered trademarks of Apple Computer, Inc.

NCGA

Continued from Page 1

than 15 Macintosh developers will announce immediate support for the new true-color standard, including BarneyScan Corp., Levco, Radius Inc., RasterOps Corp., Super-Mac Technology and Tektronix.

According to Laurie Girard, product manager for QuickDraw at Apple, 32-bit QuickDraw will be included in the next major release of the Macintosh operating system, as well as in the ROM of all future 68020- and 68030-based machines introduced by Apple.

The company will display its new color technology on the show floor, where it will also highlight products from about 20 third-party Mac developers.

NCGA will feature products from more than 220 exhibitors and is expected to draw more than 27,000 attendees. □

PRESENTING THE WRITEMOVE
PORTABLE PRINTER.

Most printers are sentenced by their own sheer bulk to lifelong confinement on a desktop.

But now GCC Technologies™ has created a printer for the Macintosh® with considerably more freedom than that. It's called WriteMove™: the "biggest" printer ever to come in an incredibly small package.

WriteMove weighs a scant three pounds. It measures just 2"x6½"x10¾". (Any smaller and you couldn't get the paper in.)

But it's the only ink jet printer of any size that gives you almost unlimited freedom to reduce and enlarge type and documents. Because it's the only one with outline fonts—imaging software that provides functionality otherwise available only with laser printers.

As a result, you can use WriteMove to compose documents with word processing software like Microsoft® Word, or desktop publishing programs like PageMaker®. And then silently print them out at 192-DPI resolution. In other words, you get much

higher print quality than the ImageWriter® II, for not much more money.

Which could bring a whole new meaning to the phrase "freedom of the press."

To exercise that freedom, see your authorized GCC Technologies dealer for a WriteMove demonstration. For the one nearest you, call (617) 890-0880.*



*In Canada, (800) 263-1405. ©1988 GCC Technologies, Inc. GCC Technologies and WriteMove are trademarks and the GCC Technologies logo is a registered trademark of GCC Technologies, Inc. Macintosh and ImageWriter are registered trademarks of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corp. Microsoft is a registered trademark of Microsoft Corp. Suggested manufacturer's retail price: \$699

INTRODUCING THE MOST INGENIOUS PORTABLE PRINTER SINCE THE PENCIL.



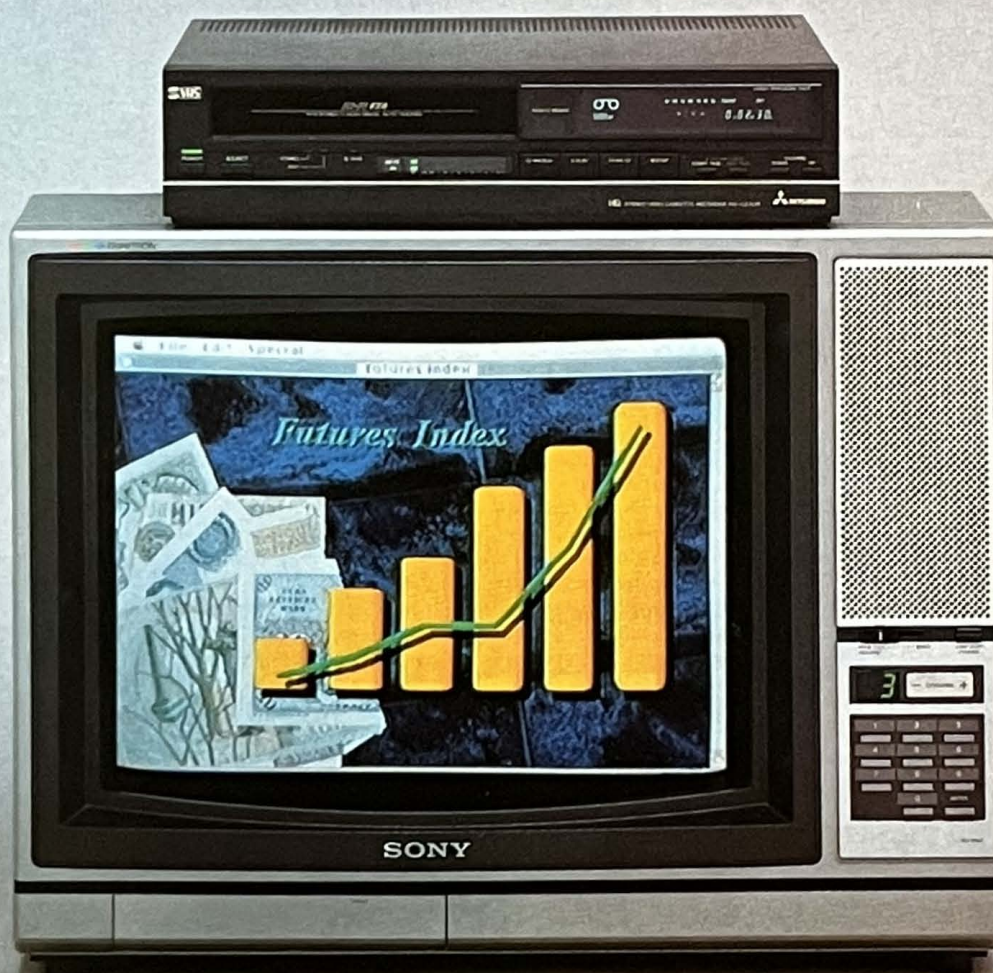
HYPE



If you want to videotape the output of your MAC[®] II, then don't get led down a path of misintentions. Consider what you truly need for desktop video: an *easy, complete, available* solution. You need one that includes real-time video capture *and* NTSC-compatible output. You need Truevision's NuVista[™] 1M videographics card and VIDI/O[™] Box.

Unretouched screen displays of a television set displaying the output of a Mac II using a NuVista card with a VIDI/O Box, and an Apple RGB monitor displaying the same image.
Mac is a registered trademark and QuickDraw is a trademark of Apple Computer, Inc.
© 1989, Truevision Inc.

OR TV



The NuVista 1M, with its high-speed video memory, real-time capture, fully-integrated genlock and broadcast-quality display, is ideal for desktop video production. With the NuVista card, you can capture, store, manipulate and display images from a standard video source. The NuVista 1M also functions as your regular Mac II video card and will run all QuickDraw™-based applications, today and tomorrow. And it only takes up one slot in your Mac II or Mac Ix.

To record your NuVista display onto videotape (VHS, Beta, Super VHS or ED Beta), just add the VIDI/O Box. It transforms the NuVista output into a high quality composite video or S-Video signal for sharp, clear videotaping. That's all there is to it. The NuVista card and VIDI/O Box are all the production equipment you need to transfer your Mac II graphics onto videotape. Simply, reliably, and economically. *Today.*

So before you get hyper, turn to Truevision, the world's leading supplier of videographics cards for personal computers. We've been helping people integrate graphics and video for years. And your Authorized Truevision Reseller can show you how, with the NuVista 1M (\$3370) and VIDI/O Box (\$995). It's not hype, it's real TV from your Mac, and Truevision. Call us at **800/858-TRUE** to obtain our fact-filled brochure about videographics, True color? True answers, or to locate the Authorized Truevision Reseller nearest you.



Truevision, Inc.
7351 Shadeland Station, Indianapolis, IN 46256

INTERNATIONAL: Canada 416/499-9400 France 33-13-952-6253 Italy 39-2-242-4551 Switzerland 41-1-825-0949
U.K. 44-1-991-0121 West Germany 49-89-612-0010 Other International 617/229-6900
Suggested retail price is US domestic price, and is subject to change.

Mac database helps daily win Pulitzer

4D system tracks complex information

By Elinor Craig

Anchorage, Alaska — As further evidence that the Macintosh is spreading from newspaper graphics departments to the newsroom itself, The Anchorage Daily News won journalism's most prestigious award last month for an investigative series that, according to Rich Mauer, city editor, couldn't have been done without the aid of a database running on the Mac.

The News was awarded a Pulitzer Prize for "A People in Peril," a 10-day series that ran in January 1988 and detailed the high rate of suicide, alcoholism and despair among a generation of young Eskimos, Indians and Aleuts in Alaska. The series was put together by 22 reporters with the help of a 4th Dimension database from ACIUS of Cupertino, Calif., that tracked Native American suicides and alcohol-related incidents in every borough and village in Alaska.

The Pulitzer-winning series, which also earned the paper a 1988

Investigative Reporters and Editors Award for Outstanding Investigative Reporting, was not the first award-winning series produced by The News with the help of a Mac database. The paper won the 1986 Investigative Reporters and Editors Award for a report on illegal campaign funds that was aided by a database that tracked campaign contributions.

The News' databases reside on an SE/30 with an 80-Mbyte hard disk. "Checking our databases is just a routine step for almost every story," said David Postman, reporter.

The databases are a far cry from the 4-inch-by-5 inch cards and multiple file cabinets used by The News' reporters to win the paper's last Pulitzer, awarded for a 1976 report on organized labor and the Alaskan pipeline.

Howard Weaver, a reporter on the pipeline story who became editor of The News in 1980, brought in the Mac in 1985, when it was still considered risky in journalism circles. That risk-taking, he said, characterizes life in Alaska. "I don't attribute all our successes to the Mac," he said, "but to an openness



FRAN TURNER/ANCHORAGE DAILY NEWS

to try new things. The Mac falls into this realm."

Now, nine Macs sit on desks around the newsroom, where they are dwarfed by monitors hooked up to the huge Coyote system from Systems Integrator Inc. of Sacramento, Calif. Copy still flows through the Coyote, but the large system doesn't have the Mac's database or calculation capabilities. The Macs are used to support the reporting staff, and Weaver has also installed Macs at the paper's three bureaus in other areas of the state.

"There are two types of reporters here," said political writer Hal Spencer, "those that under-

stand the Mac and those that don't. Those that do have a lot more power [to do their jobs]."

Weaver has been aided in his drive to bring Macs into the newsroom by Larry Makinson, the reporter who designed the database for the illegal campaign contributions story, and Mauer, who devised the "People in Peril" database. Since word of The News' success has spread throughout the journalistic world, Makinson and Mauer have demonstrated their databases at several reporting conferences.

Mauer's multilevel "A People in Peril" database includes basic

information, like sources and village elders or officials, as well as increasingly exact data on age, type of death and possible alcohol ingestion. This structure has made the database useful as an ongoing repository of sources, said Postman. "If we ever need to do a story on a village, we can look up who we talked with already, who was helpful," he said.

Mauer has also developed a HyperCard stack to keep track of details of a Daily News investigation into a bribery, kickback and racketeering case that will be published after the legal investigation

See Pulitzer, Page 16

MacInTouch RICK LEPAGE AND RIC FORD

Another virus gumshoe hits the streets

BUGS & TIPS

Policing viruses. Chris Johnson's GateKeeper 1.1 tackles the virus problem from a new angle. In a sense, the GateKeeper INIT is like a greatly extended Vaccine (CE Software's free anti-viral INIT). GateKeeper is very flexible, but its complexity makes it suitable only for technically oriented users, in our opinion.

GateKeeper works by having the Mac system manager specify access privileges of different types for different programs that need them. The Finder, for instance, needs "file" privilege so that it can create, delete and copy files. These protection rules are controlled through a GateKeeper Control Panel device (cdev). (Primary configuration data for GateKeeper can be changed with Apple's ResEdit utility.)

One benefit of its unique access-rule approach is that GateKeeper is able to keep a detailed log of system activity. The log could be very useful in diagnosing the behavior

of new viruses as well as other problems.

GateKeeper is available free for non-commercial distribution from users groups and on-line services. It has been tested successfully against Scores, nVIR, Hpat, INIT 29 and ANTI, according to its documentation.

Users of desk accessories like CE Software's DiskTop will encounter problems trying to copy files with GateKeeper installed, and there are many other situations in which GateKeeper will need special attention to avoid system problems.

SmartForm bugs. A friend called us about a couple of bugs that turned up in Claris' SmartForm Designer and Assistant programs. The first bug occurs when you use monospaced fonts, such as Courier, in a text block within a form. Although the text might look fine on screen, when you attempt to print a form to a laser printer, the right side of the text block gets

cut off, taking some of your text with it.

The other bug occurs when you create a combed field in SmartForm Designer and set the label of the field to be white text. When you use that form in the SmartForm Assistant program, whenever you perform a task that calls up a dialog box, any text entered into the combed field disappears. We found that you can get the text to reappear by clicking on the field.

A more serious problem with this type of field is that it will not print. Other fields in a form will print fine, but combed fields with the white text label will print out blank.

PRODUCTS

More than a face lift. Owners of SuperMac Technology's DataFrame series of hard disks will be more than pleasantly surprised with the recently released Version 4.0 update of its Manager utilities. The company has gone beyond the standard driver update with a few

significant additions, the most notable of which is the ability to partition a DataFrame into password-protected volumes.

The password protection of the standard partition is rudimentary. You can still look at the data on this type of volume with a disk editor, as you can in partitions created by FWB Software's Hard Disk Partition. For security-conscious users who want additional protection, SuperMac has added the ability to create a second type of partition that uses the data encryption standard (DES), developed by the U.S. government, to encrypt files that are saved in that volume.

Partitions created with the Manager can be mounted at start-up, even when the DataFrame is not the start-up disk. This includes not only the password-protected and unprotected volumes, but also volumes that use the DES encryption. Volumes can be mounted and unmounted via the Manager Control Panel device. One caveat with

the new Manager is that you cannot use disk-mounting utilities like SCSI Tools or MountEm to mount DataFrames anymore.

The update can be found on the major on-line services. If you do not want to spend time downloading the files, the SuperMac forum on MacNET has an order form you can use to get the full update package, including a new user manual, by mail for \$25.

REFERENCE

SuperMac Technology, 485 Potrero Ave., Sunnyvale, Calif. 94086; (408) 245-2202; (408) 254-0646 (technical support).

We welcome comments at MacWEEK, 4 Cambridge Center, Third Floor, Cambridge, Mass. 02142; (617) 497-2600. Electronic mail: CompuServe: (Ric Ford) 75056,1225, (Rick LePage) 75016,350; Delphi/PAN: MACWEEKBOS; MCI Mail: RICKFORD; RLEPAGE; MACWEEKBOSTON; Apple-Link (address "MacInTouch" in Subject): MACWEEK; MacNET: RICKFORD; RICKLEPAGE; GENie: MACWEEKBOS; Internet: RICKFORD@CUPORTAL.COM.

Our removable hard disk isn't the only thing you'll put in your pocket.



\$1099

Like the best removable hard disk drives on the market, ours gives you 42 megabytes capacity on each disk cartridge. So you get unlimited storage, and unprecedented portability and security, just as you'd expect.

It delivers super-fast 25 ms access speed, for the finest performance money can buy.

It comes with the MacTREE Plus hard disk management system and DS BACKUP software, plus all the cables and terminators you need. Which is more than you get with a lot of the others.

What's the big difference? Simple. Buy ours and you'll save several hundred dollars. Plus you'll get the only two year limited warranty in the high-capacity removable disk drive business. And a full year on our cartridges.



So when you think about it, the real question is not why our removable drive costs so little. But why do theirs cost so much?

Call now to place your order, or for more information.

MICROTECH
INTERNATIONAL, INC.

29 Business Park Drive, Branford, CT 06405

1-800-325-1895
(203-488-7744 in CT)

© 1989 Microtech International, Inc. All product names are trademarks or registered trademarks of their respective owners. The two year limited warranty is offered on the subsystem only. Microtech hard disk cartridges come with a one year warranty. Pricing and specifications are subject to change.

MasterCard and Visa accepted at no extra charge.

Multimedia stars at CD-ROM show

By John Battelle

Anaheim, Calif. — While the spotlight at Microsoft's Fourth Annual Conference on CD-ROM last month was on IBM's announcement of a future multimedia platform, Apple and its supporting developers quietly demonstrated that the Mac is already a premier multimedia machine.

At a booth filled with AppleCD SC drives

connected to Mac IIx machines, Apple displayed several third-party multimedia offerings, including the \$49.95 Manhole interactive entertainment disc from Menlo Park, Calif.-based Mediagenic and the Whole Earth Learning Disc, a \$149.95 multimedia CD-ROM version of The Whole Earth Catalog that is being marketed by San Rafael, Calif.-based Broderbund.



COURTESY TOSHIBA

The Toshiba XM5100A CD-ROM player can be used with Macintosh and MS-DOS machines. The \$870 Macintosh version comes with SCSI cable and a Macintosh installation kit. Like the Apple CD SC, it features full audio output.

STANDARD EQUIPMENT BY APPLE,®



Macintosh

OPTIONS BY DOVE.™

Dove gives you all the product options and feature-comforts you need to fully outfit your customer's Macintosh®. Our products offer the flexibility, speed, and performance that users demand for everyday computing. Plus, Dove offers you bottom line results.

Our Authorized Reseller program includes generous margins, special incentives, monthly product promos, and a



one-time bonus for joining our Reseller team today.*

If your Macintosh customers need FastNet™ Ethernet connectivity, Marathon® workstation performance, or MacSnap™ memory enhancement products, Dove has the winning options. Our attention to quality, support, and fit-and-finish detail translates into real value.

Look for Dove's symbol of quality on the most efficient Macintoshes.



For more information about becoming an Authorized Dove Reseller, call 1-800-622-7627, ext. 215 or 235. It's your best option.

* offer expires July 1, 1989



1200 N. 23rd Street
Wilmington, NC 28405
(919) 763-7918

Marathon is a registered trademark of Dove Computer Corporation. FastNet and MacSnap are trademarks of Dove Computer Corporation. Apple and Macintosh are registered trademarks of Apple Computer Inc.

Apple brought out two products of its own at the conference, both HyperCard-based tools for adding multimedia capabilities to stacks and CD-ROMs: the HyperSource Toolkit, which automates the creation of graphic databases, and the HyperCard CD Audio Toolkit, which allows any CD Audio track to be incorporated into a stack (see StackWEEK, Page 20).

Apple also demonstrated its Reference and Presentations Library, a CD-ROM disc containing information about and images of Apple's entire line of products. The disc was created for Apple's sales and dealer force and saved the company more than \$2 million, according to Dave Grabel, project manager in market opportunities at Apple. He added that Fortune 500 companies could save millions of dollars in printing and distribution costs by putting their internal information in a similar format.

Toshiba America Inc. of Irvine, Calif., introduced a new low-profile CD-ROM player that can be used with either the Mac or MS-DOS machines. Priced at \$870 complete with a SCSI cable and Mac installation kit, the new XM5100A drive could pose a challenge to Apple's \$1,199 AppleCD SC player. Unlike Toshiba's earlier drive, the new one has its power supply built in. Like the Apple unit, it features full audio output.

Pioneer Communications of America announced a "jukebox" drive that plays six CD-ROMs. The drive, priced at less than \$1,200, will be available in the summer for MS-DOS machines with a Mac driver to follow, the company said.

CSM Inc. of Encinitas, Calif., demonstrated a line of CD-ROM interface cards that will give users of IBM PCs, PS/2s and compatible machines access to the AppleCD SC drive. The \$149 CSM-100 and \$395 CSM-105 cards provide a SCSI interface for most CD-ROM players. □

Pulitzer

Continued from Page 14

ends, which may be sometime this spring.

"We had so much information at the beginning of this investigation and it was so complex that it was perfect for HyperCard," said Mauer. "I needed to know the relationships among all the people involved. I needed to know where I had heard of someone before."

"4D is great with similar types of information. But HyperCard can help pull together disparate and distant facts into patterns that would not be recognizable with traditional methods," he said.

Mauer said he knows of no other newspaper with as many Macs used for such a variety of purposes. However, even with the Mac well-ensconced in the newsroom, Weaver said he feels there is room to grow. He just won't guarantee that he'll stick to the Mac forever. "You don't know what will be out there," he said. "If there is something better than the Mac, I will buy that" — especially if it helps the paper win another Pulitzer. □

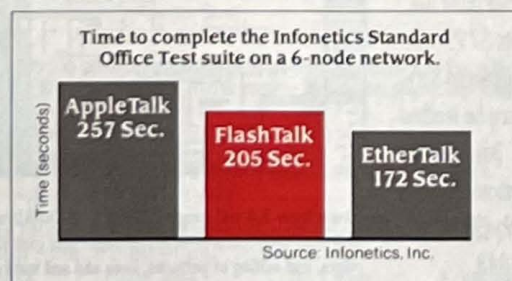
Upgrade.

Overhaul.



How to give Ethernet a run for the money.

Some people may think the way to rev up a LocalTalk network is to rip the whole thing out, lay some heavy cable, and send your computers out for an Ethernet implant. Spending big bucks in the process.



TOPS suggests a less traumatic alternative: FlashBox, the fast and easy LocalTalk *upgrade*.

For just \$189 per node, FlashBox delivers fully 80% of Ethernet performance for just 20% of the cost. How? By turning your LocalTalk network into a high-speed freeway moving data at FlashTalk rates of 770 Kbps.

Installation won't slow you down either. FlashBox plugs right into the back of your Mac and runs over your existing twisted-pair wire. It's 100% compatible with your current applications. It communicates at FlashTalk rates with PCs using TOPS FlashCard. And, unlike Ethernet, it lets you continue printing to your LaserWriter® without buying a costly gateway.

Best of all, FlashBox is available now. So stop by your nearest TOPS dealer and find out how to rev up your network without overhauling your budget. Or call the TOPS Division of Sun Microsystems at 1-800-445-TOPS, extension 103 (from outside the U.S. and Canada, call 1-415-769-8700, ext. 103).

Actual performance of your network may vary depending on the quality and length of network cable, network size and configuration. To achieve best performance, you should connect a FlashBox to each Macintosh. Using FlashBox with bridges, gateways, or other AppleTalk-only devices may require network reconfiguration or the addition of repeating devices. Copyright ©1989 Sun Microsystems, Inc.



TOPS®

When you need connections.



New ways to turn on your Mac

Mactivators allow phone start-ups

By Henry Norr

Point Richmond, Calif. — Mac users and network administrators who want their computers powered up automatically after a power failure, at a specified time or by telephone can now choose among three products offered by a small developer here called The Mactivator Co.

► The PhoneMactivator, working with the X-10 Powerhouse Telephone Responder, can turn on a Mac II or Ix when a signal is received over the phone from an X-10 beeper or a Mactivator stack that emulates it.

The X-10 Home Control system, manufactured by X-10 (USA) Inc. of Northvale, N.J., can turn on the power to any Mac, just as it does to house lights or appliances, with a timer or a signal sent by phone. Mac IIs, however, also require a start-up signal over the Apple Desktop Bus (ADB), which is normally sent by pressing the keyboard switch. The PhoneMactivator plugs into the ADB port and automatically sends the start-up signal when it gets power from the X-10 controller.

Alternatively, the PhoneMactivator can be used by itself to restart a Mac II or Ix 60 seconds after power is restored following a power failure. The new Mac Ix can be set to reboot automatically in this situation, but the earlier Mac IIs lack such a switch.

The PhoneMactivator is available now for \$99.95. The X-10 Phone Responder is available from The Mactivator Co. at list prices (\$55 with one plug-in module) and at discounted prices from many electronics and computer stores.

► The TimeMactivator is a battery-powered digital clock-timer that plugs into any ADB. The \$45 device, now shipping, turns on a



On the road with his auto-transporter semi truck, Kim Wennerberg reaches out and powers up his Mac with the PhoneMactivator. He got the inspiration for the Mactivator when he was involved in commodity trading and needed to receive quotations via satellite at 5:30 a.m.

Mac II or Ix at a time specified by a user.

► The Mactivator Jr., due in June, will automatically start any Mac model when a call comes in on a phone line to which it is attached. Power and the ADB start-up signal are sent on the first ring. Kim Wennerberg, founder of The Mactivator Co., said the \$129.95 device is ideal for use on bulletin board host systems or fax modems that don't receive frequent calls, or with a remote-access program like Farallon Computing's Timbuktu Remote.

He noted that the device should be used on a dedicated line, lest it start the Mac with every voice call.

The Mactivator Jr. will ship with software that executes a Quit command and a standard Shutdown when a caller hangs up. In case no proper connection is made after a call is received — in the case of a wrong number, for instance — the software shuts the computer down after 90 seconds.

Mike Stone, production manager at KTVK in Phoenix, Ariz., bought the PhoneMactivator to restart the TV station's Macintosh II

AppleShare server after power failures. The server, he said, is kept in the mainframe room, which is locked on weekends. "Every time we had a power failure on a weekend," he said, "someone had to come in, unlock the room and press the start-up switch. Now I can just dial in."

Stone said the station had suffered from frequent power failures, although he added somewhat ruefully that there had been none since he installed the Mactivator.

Besides running The Mactivator Co., Wennerberg drives an auto-transporter semi truck. He said he got the idea for the Mactivator series because he was formerly involved in commodity trading and wanted to begin receiving quotations via satellite at 5:30 a.m. The official name of The Mactivator Co., which he started with his father and an engineer friend, is Ofifoto, for One Foot In Front of the Other.

The Mactivator Co. can be reached at P.O. Box 115, Point Richmond, Calif. 94807; (415) 234-5178. □

News

BRIEFS

Money, Reality Technologies announce financial planner software

New York — Money Magazine and Reality Technologies Inc. have announced WealthBuilder by Money Magazine, a \$249.95 personal financial planner.

The program will include "smart worksheets" for retirement, education, home buying and insurance, as well as tax tips and debt consolidation analysis. It allows for "what-if" scenarios, with graphs that compare the investor's plan to alternative strategies and historical investment indexes going back as far as 60 years. Quarterly updates will be available by subscription.

WealthBuilder is based on Anvil/FS, a proprietary development system Reality Technologies has previously used to generate applications for several leading investment companies.

The Mac version of WealthBuilder is due in July. An IBM version is available now.

The program marks the entry into the retail software business of Time Inc., the parent company of Money.

Reality Technologies Inc. is located at 3624 Market St., Philadelphia, Pa. 19104; (215) 387-6055; (800) 346-2024.

Engineered Software to upgrade PowerDraw

Greensboro, N.C. — Engineered Software is expected to announce a major upgrade to its two-dimensional CAD package for the Mac at Macworld Expo in Washington on April 25.

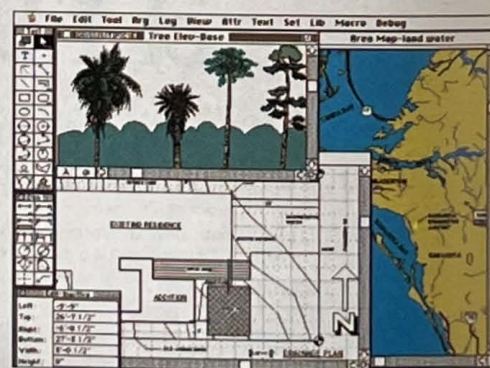
Version 3.0 of PowerDraw will support 32-bit color QuickDraw routines. It also adds such features as independent grid control and customizable rulers; editing of patterns, lines and end marks; and user control of snap-to-grid functions.

The new release, scheduled for June, will also let PowerDraw users scale text and set dimension tolerances, including

string, stack, baseline, circular and angular tolerances.

PowerDraw will keep its \$795 price.

Engineered Software can be reached at P.O. Box 18344, Greensboro, N.C. 27419; (919) 299-4843.



PowerDraw 3.0 will support 32-bit color QuickDraw routines. It also adds such features as independent grid control, customizable rulers, and editing of patterns, lines and end marks.

Iomega cuts prices on Bernoulli storage devices

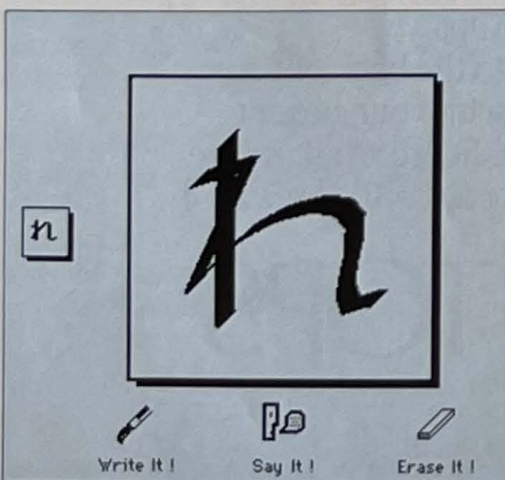
Roy, Utah — Just days after shipping its new Bernoulli II/44 removable-media storage devices for the Mac, Iomega Corp. last week announced a price cut on both the new units and its older 20-Mbyte cartridge drives. Effective immediately, the price of the single-drive version of the new external Bernoulli II/44, which has a capacity of 44.5 Mbytes, has been reduced 10 percent from \$1,999 to \$1,799. The price of the two-drive model has dropped from \$2,999 to \$2,799.

Suggested retail prices for the 20-Mbyte Bernoulli II models will now be \$1,299 for a one-drive model and \$2,299 for the two-drive unit.

Iomega's \$149 Bernoulli File Exchange program lets Mac users read and write files on MS-DOS formatted cartridges.

Iomega is at 1821 W. 4000 South, Roy, Utah 84067; (801) 778-3000.

HyperCard stack teaches Japanese



Berkeley, Calif. — A HyperCard stack created by Anonae Software assists students in reading, writing and comprehending the Japanese language.

Two stacks teach the basic Hiragana and Katakana character sets and common vocabulary. Students learn character generation by following the line strokes of each character. Sound resources, digitized with the MacRecorder from Farallon Computing, let users hear the pronunciation of the characters. The program's word list includes approximately 1,600 words.

The set of stacks costs \$45. They require 1 Mbyte of memory and, for the sound files, a hard disk.

A third program that teaches the more complex Kanji characters, which are based on Chinese roots, is under development.

Anonae Software can be reached at P.O. Box 7629, Berkeley, Calif. 94707; (415) 527-8006.

Get a FREE Subscription to MacWEEK

Applicants who qualify will receive a complimentary subscription to MacWEEK. All questions must be answered, including those which request specific numbers, to be eligible for qualification. Incomplete forms cannot be processed. The publisher reserves the right to limit the number of free subscriptions. Remember: sign and date this form before returning.

• Please start/continue my FREE subscription to MacWEEK.

- ☐ 01. Yes ☐ 02. No

9A16

1 Your company's primary business activity AT THIS (check one only):

Non-Computer Related

- ☐ 01. Aerospace
☐ 02. Architecture, Engineering
☐ 03. Research and Development
☐ 04. Graphic Arts
☐ 05. Communications: Publishing, Advertising, Public Relations, Promotion
☐ 06. Government: Federal
☐ 07. Government: Non-Federal
☐ 08. Manufacturing
☐ 09. Education
☐ 10. Finance: Banking, Accounting, Insurance, Real Estate
☐ 11. Health, Medical, Legal

- ☐ 12. Retail, Wholesale, Distribution
☐ 13. Agriculture, Mining, Construction, Oil, Transportation, Utilities

Computer Related

- ☐ 20. VAR/VAD
☐ 21. Retailer/Distributor
☐ 22. Systems House/Data Processing Service
☐ 23. Manufacturer (Computers, Software, Peripherals)
☐ 24. Computer Consultant
☐ 99. Other Businesses & Services (please specify)

2 Your Professional Title (check one only):

- ☐ A. Chairman/President/Owner/Partner
☐ B. VP/Controller/Treasurer
☐ C. General Manager/Director
☐ D. Micro Manager/Specialist/Coordinator
☐ E. Project Manager
☐ F. Art Director/Graphic Designer/Artist/Illustrator
☐ G. Manager/Supervisor (not listed above)
☐ H. Architect/Engineer

- ☐ I. Systems Analyst/Programmer
☐ J. Consultant/Advisor
☐ K. Scientist
☐ L. Educator
☐ M. Editor/Writer
☐ N. Professional (Doctor, Lawyer, etc.)
☐ O. Accountant
☐ P. Representative
☐ Z. Other (please specify)

3 Your department/function at this location (check one only):

- ☐ A. Engineering/Systems Engineering
☐ B. Research & Development
☐ C. Communications/Publishing/Public Relations
☐ D. Art/Creative Design
☐ E. MIS/DP/Information Systems
☐ F. Manufacturing/Operations/Production
☐ G. Sales/Marketing
☐ H. Administration/Management/Personnel
☐ I. Accounting/Finance
☐ J. Education/Training
☐ K. Science
☐ L. Consulting
☐ Z. Other (please specify)

4 Are there Macintoshes or other PCs listed below owned and/or planned for purchase within 1 year at this location?

- ☐ Yes ☐ No
 (Write in accurate quantity for all that apply)

	Currently Owned (Quantity)	Plan to Purchase (0-12 Months) (Quantity)
01. Macintosh II		
02. Macintosh SE		
03. Macintosh Plus		
04. Macintosh (Other)		
05. IBM/Compatible Micro		
06. Workstation (e.g. Apollo, Sun)		

5 If your firm's primary business at this location is retailing, reselling or consulting, how many Macintoshes are sold per year (answer one only):

- ☐ A. Retailer: sold per year _____ (specify quantity)
☐ B. Reseller: resold per year _____ (specify quantity)
☐ C. Consultant: Purchased by your clients through your firm's recommendations per year _____ (specify quantity)

6 Please check the Mainframe(s) or Minicomputer(s) at your location (check all that apply):

- ☐ 01. VAX ☐ 02. IBM ☐ 03. Other ☐ 09. None

Required: Company name and company street address must be written below or applications cannot be processed. Please print.

First Name	Last Name
Title	
Business Telephone	
Company Name	
Division	MS
Business Address	
City	State Zip

Optional: Enter home address below ONLY IF YOUR COMPANY WILL NOT ACCEPT DELIVERY. (Company information is still required.)

Post Office Box or Street Address	
City	State Zip

7 Do you purchase, recommend, specify or approve any of the Macintosh/Compatible products listed below?

- ☐ Yes (If yes, please check all that apply) ☐ No

Computers

- ☐ 01. Macintoshes
☐ 02. Workstations
☐ 03. Minis, Mainframes

Connectivity

- ☐ 10. Local Area Networks
☐ 11. Modems
☐ 12. Micro/Mini/Mainframe Links
☐ 13. Communications Software

Peripheral Equipment

- ☐ 20. Laser Printers
☐ 21. Color Printers
☐ 22. Color Monitors
☐ 23. Hard Disks
☐ 24. Backup Systems
☐ 25. Plotter, Charting Devices
☐ 26. Scanners

Add-In Boards

- ☐ 40. Memory Boards
☐ 41. Graphic Boards
☐ 42. MS DOS Boards
☐ 43. Ethernet Boards

Software

- ☐ 50. CAD/CAM
☐ 51. Graphics
☐ 52. Desktop Publishing
☐ 53. Desktop Presentation
☐ 54. Database
☐ 55. Programming
☐ 56. Accounting, Payroll
☐ 57. Spreadsheets
☐ 58. Music
☐ 59. Project Management
☐ 60. Word Processing
☐ 61. Utilities

8 If you help purchase, specify, recommend or approve Macintosh Computers, software or peripherals, for how many MACs do you have this involvement over the course of one year?

- ☐ 01. 500 + ☐ 05. 10-19
☐ 02. 100-499 ☐ 06. 4-9
☐ 03. 50-99 ☐ 07. 1-3
☐ 04. 20-49 ☐ 09. None

9 Please indicate the communications capabilities that the Macintoshes at your location have (check all that apply):

- ☐ 01. Local Area Network
☐ 02. Communicate with corporate workstations, mini or mainframe computers
☐ 03. Communicate with remote mini or mainframe computers
☐ 04. Communicate via modem
☐ 05. Voice/Data
☐ 09. Other (please specify) _____

10 Indicate how many employees there are in your entire company (check one only):

- ☐ 01. 1000 or more ☐ 02. 100-999 ☐ 03. Under 100

11 Indicate an additional individual at this location who might qualify for a FREE subscription to MacWEEK:

Name _____

Title _____ Dept. _____

Your Signature _____

Title _____ Date ____/____/____

PLEASE BE SURE THAT ALL QUESTIONS ARE ANSWERED.

FOLD HERE FOR MAILING

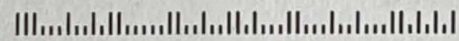
DO NOT STAPLE—TAPE HERE



Place stamp
here.
Post Office
will not
deliver without
postage.

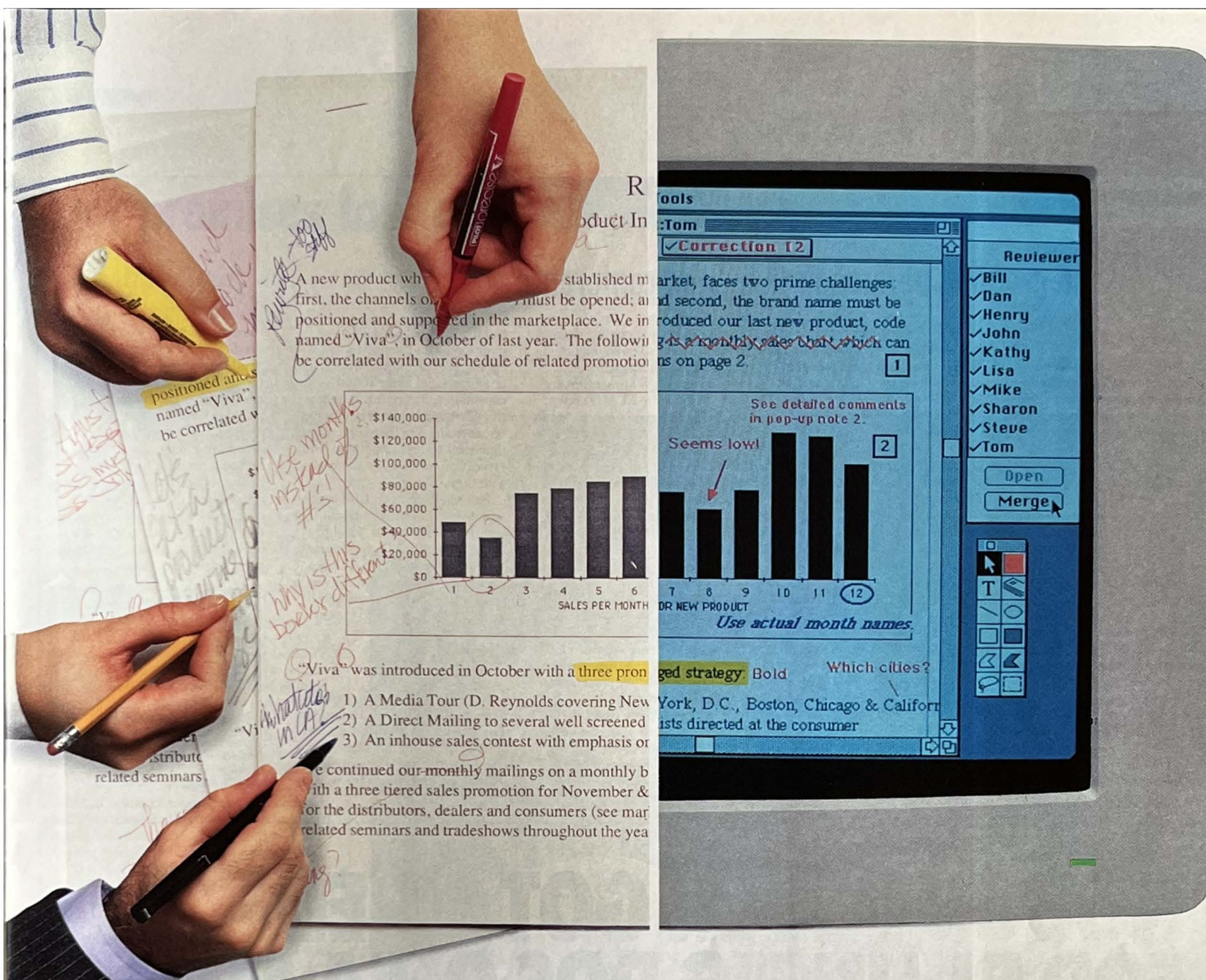
MacWEEK

P.O. Box 5806
Cherry Hill, N.J. 08034-9641



FOLD HERE FOR MAILING

DO NOT STAPLE—TAPE HERE



Make Your Mark, Together

Introducing Mark Up™, Workgroup Editing & Review Software

It's ironic that documents created with hi-tech efficiency revert to archaic methods for review: lots of paper, red pencils, scribbles, mail delays and wasted time. Now there's real improvement for group editing, review and approval — MarkUp.

Here's how it works: print an image of a Macintosh document to disk from any application with MarkUp Document Creator. Publish it electronically to a workgroup for review.

Group members don't even need the creating application, just MarkUp. Reviewers work simultaneously — on

a network or by transferring files — making comments on transparent overlays of the MarkUp document.

MarkUp provides tools to rewrite, annotate, highlight, strike out, correct, manage and approve documents of all types. It even keeps a journal and status of editing activity.

When review is completed, use MarkUp's powerful merge feature to combine a group's comments and print the annotated document as a basis to rework the original. Better yet, open the original document next to the MarkUp document with Multi-Finder and copy changes directly.

Real productivity improvement means working better — together! Whether your group numbers two or twenty two, you'll produce higher quality documents in much less time. Reduce paper traffic, meetings and travel. Use MarkUp for reports, drawings, letters, spreadsheets and proposals.

Inquire about MarkUp today. Take a step toward making your mark, together.

For more information or the dealer nearest you, call:

Mainstay

5311-B Derry Avenue
Agoura Hills, CA 91301
(818) 991-6540

71 rue des Atrebatas
B-1040, Brussels, Belgium
322/733.97.91

StackWEEK ERIC ALDERMAN AND STEVE MICHEL**Hot works in progress at Anaheim CD-ROM conference****NEW PRODUCTS**

As one of the more forward-thinking trade shows, the Microsoft CD-ROM Conference provides interesting attractions for its 2,000 attendees. Although there were no stunning new products released last month, several developers showed very exciting works in progress.

There were a few introductions of particular interest. Apple announced two new tool kit disks for HyperCard developers, HyperSource and the CD Audio Toolkit. Both are still in development and are due to be released later this year.

Sounds great. The CD Audio Toolkit is clearly the more dazzling of the two. The product got an exciting testimonial presentation from Robert Winters, a music professor at the University of California, Los Angeles. Winters is the type of guy who obviously puts on a very entertaining class and who just as obviously knows his stuff. What

he showed was a first cut of a stack, produced in collaboration with The Voyager Company, that uses the routines from the CD Audio Toolkit. To be released as part of Voyager's CD Companion Series, the stack interactively documents Beethoven's Ninth Symphony by allowing the user to browse through the different elements of the piece. The stack is written to work with an off-the-shelf copy of a Beethoven CD, so all an owner of a player must do to use the stack is go down to the local record store and buy the CD.

This was one of those demonstrations that leaves you staring into space, the wheels of your mind turning as you contemplate the exciting possibilities presented by a new technology. Steve Michel is already hard at work on his Dylan stack.

Picture this. Although overshadowed by the Audio Toolkit, HyperSource was an exciting announcement. Essentially, it's a

tool for managing graphic documents. It allows you to import Paint PICT, Encapsulated PostScript (EPS) format files and, with a little more XCMD code, TIFF files. HyperSource is slightly different from other tool kits from Apple; it's not a collection of XCMDs but rather a core structure of a stack upon which developers can build and from which they can pillage. However, there are some valuable XCMDs included, such as one that allows you to view, copy from and print a graphic image.

HyperPC? In other show news, Microsoft bigwig Bill Gates claimed that by this summer we will see several software development platforms running under Windows that will be "much richer" than HyperCard. We will patiently wait to see whether this actually comes to pass, of course. The promise of wonderful Windows applications became old and tired long ago. Given the limited

installed base of IBM PCs equipped with the necessary processing power, mouse support and graphics — let alone sound — capabilities, it certainly seems as though it will be years before we see anything like the momentum that exists today on the Mac with HyperCard (and will soon exist with SuperCard).

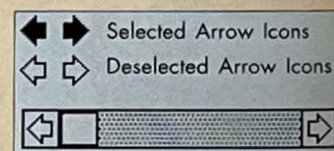
Later in the day, an IBM representative stated with a straight face that the PS/2 made an "ideal platform" for multimedia applications. Since April Fools' Day was not until later in the week, his remark was puzzling. Perhaps by "multimedia" he meant that text could appear both on screen and paper.

TIPS

Here are some tips for creating a horizontal scroll bar in HyperCard. The scroll bar shown at right was created by combining several different elements. First, a graphic image of the scrolling area was

used. At each end, icon buttons produce the scroll arrows. You'll need to create your own icons, though. As the figure indicates, you need one icon in the selected (filled in) state, and one in the deselected (hollow) state for each direction. Finally, a rectangular button is used for the thumb.

To produce the smooth dragging action along the scroll bar, use a dragRect XFCN. Also, remember to allow a click on the scroll bar itself (the gray area) to scroll in the appropriate direction. — E. A.



If you have comments or tips, write us at StackWEEK, c/o MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105. Electronic mail: MCI: STACKWEEK. AppleLink: D1507 (Steve) or D1577 (Eric); MacNET: MICHEL or EALDERMAN.

NOBODY EVER GOT FIRED FOR RUNNING DOS ON A MAC

After all, running MS-DOS® on a Macintosh® opens the door to thousands of software programs only available for the PC.

And there's only one software package that brings true MS-DOS compatibility to a Mac II, IIX, or 68020-accelerated SE.

SoftPC®

SoftPC enables you to run all the PC best-sellers — Lotus® 1-2-3®, WordPerfect®, etc. — on the Mac. And those PC programs developed in-house for special purposes.

You can even use PC and Mac programs at the same time, thanks to SoftPC and Apple's MultiFinder™. Copy and paste between PC and Macintosh applications.

And when you finish, all information can be stored on the same Macintosh hard disk.

PUT YOURSELF ON THE FAST TRACK

No boards... No hassles... SoftPC is easy to install and upgrade. Just like you'd expect from any Macintosh application. Double-click. That's it.

SEEING IS BELIEVING

Don't take our word for it. Visit the nearest computer dealer and ask for a demonstration of SoftPC. It's a safe approach.

To find the dealer closest to you, call 800-848-7677.

Insignia

Insignia Solutions Inc.,
787 Lucerne Drive
Sunnyvale,
California 94086
Tel. (408) 522-7600
FAX: (408) 733-9541

™ trademarks and ® registered trademarks of their respective companies.



"See us at MacWorld Expo booth #1363"

Igor promises fast and flexible graphing

WaveMetrics targets scientists, engineers

By Becky Waring

Lake Oswego, Ore. — Igor, a new graphing and data analysis package from WaveMetrics, began shipping just last month, but the company already has plans for a significant upgrade to the \$195 package to be released this summer.

Igor offers powerful graphing functions that in many areas, according to the company and several users, exceed those of the current leader in the field, Cricket Graph from Cricket Software of Malvern, Pa. Igor also includes numeric data analysis and transformation capabilities, on-line help and a macro language interpreter that works in the background under MultiFinder.

Jim Freeman, a research engineer at Boeing Electronics in Seattle, said he prefers Igor to Cricket Graph for three reasons: its high printing quality, quick screen redraw and data analysis features. The kind of complex graphs Freeman produces, consisting of up to 1,000 data points, can take minutes to redraw after every minor change in Cricket Graph, whereas Igor takes seconds, he said.

According to Howard Rodstein, president of WaveMetrics, Igor was optimized for speed. The program is targeted at scientists, mathematicians and engineers who need the numeric analysis side of Igor and who also need to produce publication-quality graphs.

With Igor's graphing functions, all fonts, styles (including subscripts and superscripts) and sizes of text can be used for axis labels and annotation. Axes themselves can be independently or automatically scaled. Each set of data points in a graph can have its own color, line style and marker and can be plotted in time series or x, y fashion.

Printed output uses the highest printer resolution. Multiple graphs can be printed on a single page overlaid or separately.

Graphs and tables in Igor are dynamic. Changing a data point in a table will automatically cause related graphs to be updated.

Igor's numeric analysis functions include evaluation of mathematical expressions, Fourier transforms, regressions, smoothing, integration, differentiation, simple statistics, sorting and searching.

WaveMetrics claims that Igor can support unlimited numbers of data arrays per graph and any number of points per array. Boeing's Freeman said he has not yet encountered Igor's limits, even with three 1,000-point graphs open at once.

The upgrade planned for the summer will be provided free to registered users, Rodstein said. Display speed will be increased by 200 percent to 300 percent;

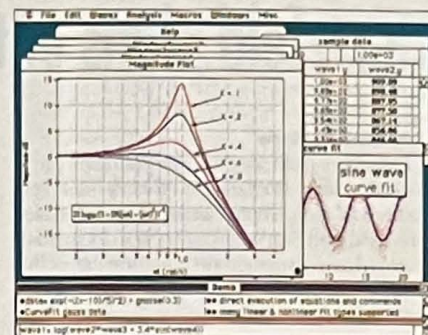
graphic flexibility of axes, markers and labels will be improved; and a new indexing method for data arrays will allow faster and easier selection of data subsets.

The new version will also include an External Operations hook that will allow C programmers to add features and customize Igor with windows, menus and dialogs the

same way external commands (XCMDs) are used with HyperCard.

WaveMetrics can be reached at P.O. Box 2088, Lake Oswego, Ore. 97035; (503) 635-8849. □

WaveMetrics' Igor allows interactive experimentation with numerical data and a wide variety of graph types.



Toolboxes For Scientific Image Analysis...

Tools of the trade. Perceptics provides you with the right tools for your scientific, quantitative image processing and analysis. Choose them from one of our "toolboxes" for the Macintosh™ II...

Software. Our *TCL-Image™* software package is your choice if you don't need video-rate speeds. Use its rich set of image processing commands interactively or combine them in a script file. Also, capture video images directly.

Hardware. Our *NuVision™* external hardware accelerator gives you video-rate image capture, processing, and display. Grab images from monochrome, RGB, and high-resolution (1K × 1K) video or digital signals, even in non-standard formats. Process them with parallel DSPs and a pipelined pixel processor. Choose from a 768 × 512 or 1280 × 1024 display. Plus, you get complete software, including full C source code.

Customized. You can use our tools to build bigger and better tools. Each of our products is adaptable so you can amplify and extend its capabilities to meet your own particular needs. And, each is backed by our comprehensive documentation, customer support, and expertise in scientific image processing.

For scientific image analysis on the Macintosh II, choose the best tools from...

perceptics™

Imaging Division
725 Pellissippi Parkway
Knoxville, TN 37933-0991
(615) 966-9200 • Fax: (615) 966-9330
AppleLink: Perceptics • MacNET: Perceptics

NuVision is a trademark of Perceptics Corporation.
TCL-Image is a trademark of Multihouse TSI B.V.
Macintosh is a trademark of Apple Computer, Inc.



See us at MacWorld Expo
Booth #1210

4-Mbyte SIMM from Clearpoint

Hopkinton, Mass. — Clearpoint Research Corp. has introduced a 4-Mbyte single in-line memory module (SIMM) for Macintosh IIx and IIcx machines running under the A/UX operating system.

The MC2RAM/4MB, which incorporates 32 1-Mbit surface-mounted DRAMs, was redesigned to fit in the IIcx. The \$1,395 module will be available May 1, a company representative said.

Clearpoint is at 99 South St., Hopkinton, Mass. 01748; (508) 435-6184. □

Hertzfeld plans entertainment system

By Connie Guglielmo

Palo Alto, Calif. — Mac programmer extraordinaire Andy Hertzfeld is at work on a "revolutionary" home entertainment system based on a modified Sun Microsystems workstation.

At a local users group meeting here this month, Hertzfeld demonstrated what one observer described as "an entertainment system

control construction set." The system, with graphical user interface, has a master control for programming televisions, stereos, VCRs and other home entertainment equipment.

Using the construction tools, an individual can create controls such as timers, clocks, counters, slide controls and buttons. The system could be programmed, for instance, to

automatically record only movies starring specific entertainers or only sporting events between certain teams. There are also some environment controls, including the ability to select lighting and sound levels.

Once preferences and controls are set, all the equipment can be operated using a remote control or "wand."

Hertzfeld declined to talk about his latest invention, which is being developed for Frox, a West German company expected to set up shop in the United States, but said that it probably won't reach market until late 1990. □

National debut for high-end CAD package

By Cliff Lehman

Philadelphia — A little-known software developer based here will announce a new version of a high-end Mac CAD package this week, along with plans to market it nationally for the first time.

Amiable Technologies will show FlexiCAD 1.2 at the National Computer Graphics Association show here. The upgrade, due to ship in June, is tentatively priced at \$1,295. The company had limited distribution of FlexiCAD 1.0 to the East Coast.

"FlexiCAD's features, especially its double floating-point 16-digit precision, puts it in the same league as AutoCAD and VersaCAD," said Yuan Chang, product manager and engineer. "It's a cut above programs like Claris CAD and MiniCAD that use integers."

FlexiCAD's high-powered mathematical foundations let it precisely zoom in on drawings an unlimited number of times, he said.

FlexiCAD 1.2 adds a bill of materials function, which allows users to attach database attributes to drawings and extract information for facility management and job costs.

The program supports all popular digitizing tablets in sizes from 12 inches by 12 inches to F size. With the tablet support and FlexiCAD's macro language, users can create custom templates for controlling menu items and commands from a tablet.

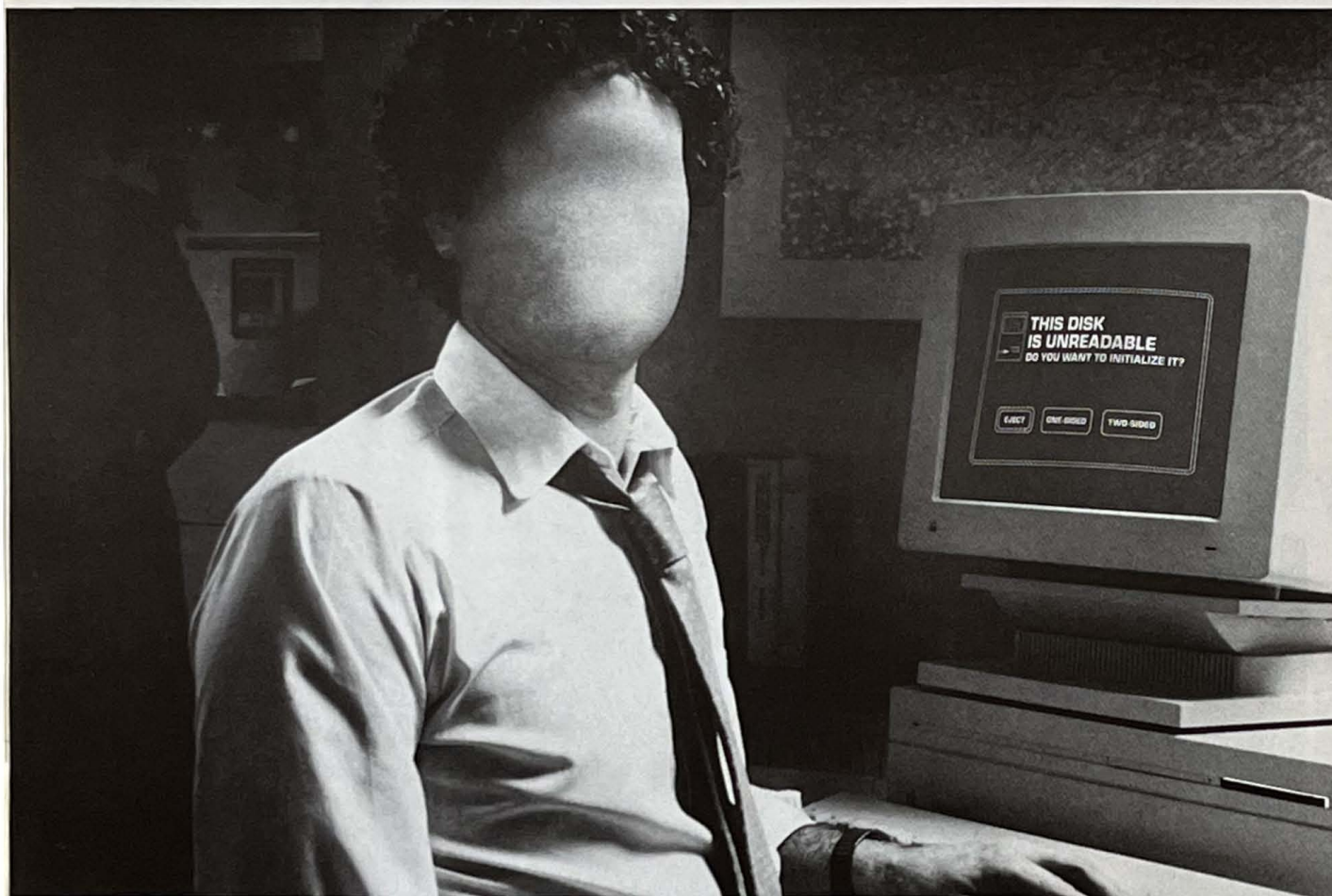
"The program's strongest suit is its flexibility and its macro language," said Alex J. Donofrio, lead bioprocess engineer at Life Sciences Inc., an engineering and architectural company in Philadelphia that specializes in projects for the pharmaceutical and biotech industries. "We have engineers who are not computer operators or drafters in any sense," he added. "With FlexiCAD templates we are able to get them up and running and producing drawings within two days."

FlexiCAD makes full use of the 1,000-line resolution of graphics tablets, allowing highly precise mapping and tracing. The program supports ANSI dimensioning and tolerance standards.

FlexiCAD now boasts multiline capabilities that allow users to specify distances between up to 256 parallel lines. Users can also define line styles, widths and as many as 256 colors.

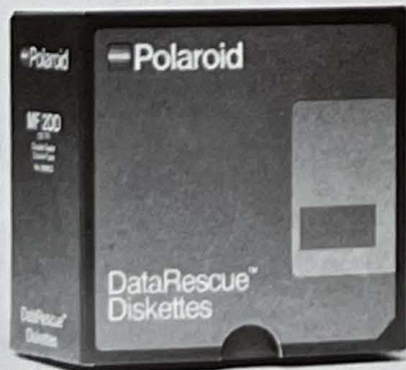
Version 1.2 can import and export DXF, PICT and PICT2 files. It supports AutoCAD's DXF file format, including the Release 10 version. "This means, for instance, that FlexiCAD will recognize and maintain the integrity of a 'B' spline drawing coming from AutoCAD," said Jim Chang, president of Amiable.

Amiable is at 3508 Market St., Suite 210, Philadelphia, Pa. 19104; (215) 222-9066. □



FACE DATA LOSS WITHOUT LOSING IT.

Polaroid's proprietary DataRescue™ Service ensures risk-free use. Should a DataRescue™ Diskette become damaged or contaminated, Polaroid will make every effort to recover your data within 48 hours and return it on a new diskette. **FREE.**



A Macintosh® lets you prepare outstanding reports, newsletters, charts, etc. When you think about the time it takes to get your work just right, you'll always save on DataRescue™.

With the company counting on you, and with thousands of dollars in time and resources on the line (and on your diskette), count on DataRescue™ Diskettes to protect your files — and your bottom line. So you can face data loss without losing it.

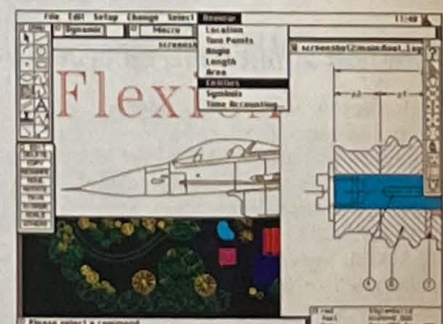
DataRescue™ Diskettes from Polaroid — protecting the Macintosh user's best creativity.

DataRescue™ Diskettes

Polaroid

For your nearest dealer and a discount on your next order, call 1-800-443-5876.

Macintosh is a registered trademark of Apple Computer, Inc.



FlexiCAD's high-powered mathematical foundations let it precisely zoom in on drawings an unlimited number of times.

Users stuck on SuperGlue will soon be able to try II

By Henry Norr

Williston, Vt. — Solutions International last week announced SuperGlue II, adding a new annotation feature and other enhancements to the print-to-disk utility.

SuperGlue lets users save a QuickDraw image of documents created with most Macintosh applications. The image file can then be viewed and printed by other users who

have SuperGlue or the free Glue Viewer program, even if they don't have the original application.

With SuperGlue II, which is due in late May, users will be able to add GlueNotes, scrollable pop-up boxes containing text or graphics, anywhere on an image file. SuperGlue II owners who receive image files from others can add their own comments, correc-

tions or suggested substitutions for text and graphics, then send the file or just the notes back to the originator.

In addition, the upgrade adds full support for color and gray scale, a new Lasso tool and a Nudge command for selecting portions of an image. Users can now save a document as a folder of separate PICT files (for use with slide makers, for instance) and

specify the field delimiter when tabular material is extracted as text from an image. One-Timer, an FKey included in the package, quickly selects the SuperImageSaver driver in the Chooser, then returns it to the previous settings.

SuperGlue II will be priced at \$119.95, up \$30 from the previous release. The upgrade will be free to those who buy the program after April 6 and \$25 plus \$4 shipping and handling for current owners.

Solutions International is at 30 Commerce St., Williston, Vt. 05495; (802) 658-5506. □

MacWEEK

UPDATE YOUR RECORDS,
MACWEEK'S MOVED TO:

301 Howard Street

San Francisco, CA 94105

415.243.3500

415.243.3650 sales fax

415.243.3651 production fax

415.243.3652 editorial fax

PROTECTION FROM HEAD CRASH



ONLY \$995
Also Protects Against
Computer Viruses!

Hard disk failure is a catastrophic experience. And, sooner than you think, it'll happen to you. Whether it's caused by simple operator error, a killer virus, or the dreaded "head crash", irreplaceable data will be destroyed at incredible expense. But, thankfully, affordable protection is here at last...

Introducing the Braemar SX40™ high-speed tape back-up system for the Macintosh®, with 4 breakthrough features...

1. FAST—Back-up an entire 20 megabytes of data in less than 12 minutes. Or do incremental back-ups in a blink of the eye.

2. Easy to Use—Follows the Macintosh interface and backs-up an entire 40 Mb on a single DC 2000 Mini Data Cartridge.

3. Safe—Secure your entire hard disk on ONE medium in ONE place! It would take a stack of more than 70 floppy disks to store as much as a single DC 2000 cartridge.

4. Affordable—Studies show that it can cost upwards to \$90,000 to reconstruct typical CAD/CAM data on a 20Mb hard drive. This is about 90 times more expensive than the SX40 Tape Drive.

See us at
MACdex/Spring '89

April 10-13, 1989
McCormick Place
Chicago Illinois

**Braemar
CARLISLE**

"A WORLD LEADER IN DATA
STORAGE TECHNOLOGY"

Braemar Corporation Division of Carlisle Corporation
(612) 890-5135 FAX (612) 890-0791

Call 1-800-328-2719
For a dealer near you!

Macintosh is a registered trademark of Apple Computer Co.

Letters

Bezier curve definition raises 'points' of debate

We would like to thank Randall Kincaid for his informative article on PostScript fonts (March 14).

However, in Cliff Lehman's accompanying article on Bezier curves, there is an inaccuracy. The bending of wooden slats with pegs does describe the use of cubic splines, with their "knots," but this is not the same as the Bezier, which depends on the use of control points outside of the actual path being rendered. The first is like drawing a smoothed polygon in MacDraw; the second is used in FreeHand, Fontographer and Illustrator. Peter Karow's book, "Digital Formats for Typefaces" explains in detail the various formats in use for this type of work.

Peter Fraterdeus, president
Alphabets Inc.
Evanston, Ill.

Cliff Lehman responds:
Karow's book is excellent. I refer

to it often. On Page 84 it states, "Mathematically, [the Bezier function] is similar to the spline function (a third degree polynomial as mentioned later on)."

In any case, the metaphor of bending wooden slats around pegs was meant to concretize (to use yet another metaphor) an otherwise abstract mathematical concept.

Beziers involve four control points (referred to in Karow's book as Bezier knots), two end points (pegs) that are on the curve described and two end points that lie outside it. Using a mathematical formula, the knots are used to determine the point (peg) at the apex of the curve. Functionally, as well as metaphorically, that formula takes the place of the pegs used in my metaphor.

Desktop video is going strong, vendor says

Andrew Goodman's recent Soapbox article (March 7) disparaging the concept of "desktop video" included some technical claims that are patently inaccurate about the equipment and systems being

used for video. These are:

► Goodman implies that the Macintosh is slower than either the Amiga or MS-DOS systems in generating high-quality graphics. This is not the case. Try using MacroMind's Director or VideoWorks II (especially with the Accelerator), and you find that you can animate images not only easily but quickly. If you're thinking about ray tracing or other "network-quality" images, consider how many days and weeks it takes the \$100,000-plus systems to generate those images.

► It's true that the bulk of any marketing or training video is going to be of live sources (for example, people, places and things). But current edit controllers and edit systems are complex, often finicky and hard to learn, much like early computers and MS-DOS. The Worx system reduces this complexity to the point where a relative novice can perform edits with less than an hour of training. To make an analogy, a Mac-based desktop publishing system costs \$10,000, equivalent to a small typesetting machine, and a typewriter may only cost \$1,000. But look how much you save and what else you can do with the Mac.

See Letters, Page 26

Editorial

Perception vs. reality in Mac land

A few years back, Rolling Stone magazine launched a much-discussed media campaign under the slogan "Perception vs. reality." The campaign was designed to poke holes in the conventional wisdom about Rolling Stone readers and their allegedly unsophisticated consumer tastes, thus luring upscale advertisers into the magazine.

Under the heading "perception," the campaign's ads featured a long-haired '60s holdover, a brightly painted Volkswagen bus, kegs of cheap beer and George McGovern. The "reality" for Rolling Stone readers, the magazine insisted with accompanying photos, was a neatly groomed young man on the go, a sleek foreign car, a six-pack of imported brew and Ronald Reagan.

For the past few years, Macintosh users have labored under the same conventional wisdom that inspired the Rolling Stone campaign. In popular mythology, the Mac is a maverick machine, developed by and for anti-corporate mavericks and running a maverick operating system. It was a product of the 1980s with an image of the 1960s, making life difficult for MIS directors trying to get it in the company door.

Vive la non-difference. But now, as reported in these pages two weeks ago, a study prepared by the Austin, Texas-based research company IntelliQuest may do for the Mac community what "Perception vs. reality" did for Rolling Stone.

It turns out that personal computer users who prefer Macs are no more likely to vote for Democrats, eat sushi or vacation at the latest "in" spot than are personal computer users who prefer IBMs or clones running MS-DOS. Mac users are, in effect, right in step with the men and women in the Big Blue flannel suits.

That's good news for Mac-loving micromanagers who have been swimming upstream against the Mac's alternative image since 1984. All the same, the survey's findings can't help but provoke a certain visceral sadness.

It's not that we at MacWEEK necessarily always vote for Democrats or eat raw fish every time we can sneak away from the deadline-crazy newsroom. And God knows journalists can't afford the trendiest vacation spots.

But the survey's findings bring into the open the questions that have been whispered for a couple of years now: Has the Macintosh community lost its edge, its creative wackiness, its sense of excitement? Has Apple become a conservative institution committed to maintaining the status quo? Is the company "for the rest of us" — perish the thought — now no more than the IBM of the West?

The spirit's still there. We prefer to look on the bright side. Just as the Mac inspired the rest of the industry to adopt ease of use and a graphical user interface, we're confident that as the Mac continues its move into the corporate arena, the machine and its supporters will continue to spread their brand of creativity throughout the IBM world, changing that world more than it changes them.

We are also comforted by the survey's finding that some differences still exist. When Mac users go out to eat, they're likely to pile into a Porsche or Mercedes and head for an Italian restaurant; MS-DOS fans, on the other hand, slide into a Cadillac and go prowling for a steak.

And while MS-DOS users turn on the television in search of someone booting a field goal on a rainy Sunday afternoon, Mac lovers boot their machines and start hacking. That's the spirit that inspired the dazzling creativity of the early Mac developers, and that's the spirit that assures us of the resilience of the Mac mind-set.

Even if, when you sit down at a sushi bar on your next trip to Comdex, you can't tell the Macies from the DOSies without a score card. □

Mac Soapbox JAMES KALMBACH

Smartening up readability formulas

Thanks to the Macintosh, checking the readability of a document is easier and more convenient than ever. No more syllables to count or numbers to crunch — just click a button and wait. And yet, what do you really know about the information your computer gives back to you? What can you possibly gain from an algorithm that is dated, inaccurate and easy to misuse?

A readability formula is essentially a primitive expert system. It predicts whether a text will be too difficult for its intended audience, usually by measuring the sentence length and word length in the text and then comparing those numbers with a predetermined scale of some sort.

Most readability formulas were developed in the 1940s. They are artifacts of the letterpress era, when mass circulation magazines, newspapers and books dominated the print industry and general-interest publications like Look, Life and The Saturday Evening Post were at their peak. Specialty magazines and newspapers like Macworld or MacWEEK were almost unheard-of. Manuals and instructions were rare, and brochures, newsletters, booklets and other junk were thankfully scarce.

Back then, when type was set by Linotype machines, many of the things a Macintosh does effortlessly were impossible — or at least expensive and time consuming. In that time of mass-circulation publications and more limited,



GORDON STILLER

closely controlled tools for visual emphasis, readability formulas may well have been reasonable tools for writers.

However, as with any expert system, a readability formula is only as good as its knowledge base. Most people who have access to these formulas know little about what variables the formula measures or what texts the formula designers used for comparison when developing their scale. Instead, we take the numbers on faith.

Recently, I reviewed the professional literature on readability and was surprised to find that the critics of readability formulas and the defenders of formulas all agree with one another. Readability formulas work, they say, but there are

important limitations and dangers.

The difference between the positions of the two sides is largely in emphasis. Critics say, "Sure, readability formulas work, but look at the limitations and dangers." Defenders say, "Sure, there are limitations and dangers, but look, readability formulas work!"

All this agreement bodes well for the future of readability formulas, but what does it say about their present use?

► Readability formulas can work. They can predict the average difficulty of texts for general readers. If you are aiming your Mac-generated prose at large, general audiences, you are probably safe in using a formula to check your writing. If, however, you are writing to a narrower, specific audience, then formulas are likely to give you inaccurate readings.

► Readability formulas cannot be adjusted for the unique vocabulary of special-interest groups. For example, because "Macintosh" and "computer" are both three syllables long, many popular formulas will

See Soapbox, Page 26



From the company with a famous name...

EMAChail Gorbachev

Mikhail Gorbachev. Now there's a guy with a lot of responsibility on his shoulders. One mistake and he could find himself right up to his glasnost in trouble.

EMAC has a pretty good understanding of Gorbachev's situation. You see we're both world leaders concerned about security. But at EMAC, it's the security of your data. From 60 up to 155 megabytes of your data. That's why we build great tape back-up products

for the Macintosh.[®] They're more effective at bringing back dissident data than the KGB, and a heck of a lot more user friendly.

EMAC tape systems for the Macintosh. Taking the initiative for a more secure world.

EMAC – a full line of products and support from the company with an historical imperative.



EMAC 
A Division of Everex Systems, Inc.

Stand alone and in combination with hard drive, 60MB.
Impact tape, 155MB. Includes EMAC Tape Manager software

48431 Milmont Drive, Fremont, CA 94538 For Information call 800/821-0806 ext. 2222 (in CA 800/821-0807 ext. 2222)

Macintosh is a registered trademark of Apple Computer, Inc. EMAC and Everex are trademarks of Everex Systems, Inc. KGB is the mark of Komitat Gosudarstvennoy Bezopasnosti, honest! Above information subject to change without notice.
© 1989 Everex Systems, Inc. All rights reserved

Soapbox

Continued from Page 24

tag them as hard words that make prose less readable. They may, in fact, be less readable for general audiences, but not for Mac users.

► Readability formulas cannot be adjusted for the interest of the reader. When people aren't interested in what they are reading, formulas do a pretty good job of predicting how well they will comprehend, but when readers are interested, these differences disappear.

The effect of these limitations is that in

many cases, readability formulas make your writing appear to be more difficult than it really is. The only way to change the results of a formula is to shorten sentences or simplify vocabulary. Consequently, you must be constantly vigilant when you use formulas to check your writing. Otherwise, you may find yourself hacking apart the sentences and dumbing down the vocabulary of what used to be pretty good prose to needlessly reduce a readability score.

Even worse, both critics and supporters agree that readability formulas are not

intended to measure most of the elements that make documents truly usable: organization of ideas, graphics, typography, dingbats, rules and so on. But these areas of usability are precisely the things that any Macintosh computer does well.

Today, letterpress has given way to offset lithography and to photocopy machines; Linotype has been replaced by photo and digital typesetting; and typewriters are fast losing ground to dot-matrix printers and LaserWriters. Readability has never caught up. When you look at a formula, you

can almost smell hot lead snaking off the page. Perhaps a new generation of style checkers driven by natural language parsers will help drag readability into the '80s. Until then, using a readability formula on your Macintosh turns the old advertising slogan on its ear and gives you the power to be prevented from being your best. I think we deserve better. □

James Kalmbach teaches in the English department at Illinois State University in Normal, Ill.

For those who can afford to wait...



Later this year, you'll have a chance to become the lucky owner of a Mac Laptop.

In the meantime, there's a computer for the rest of us. MacLite.

A really portable - and really affordable - solution for Macintosh users that's available now.

If you've ever wanted to do some writing on vacation; take your name, address and phone number file on a business trip; take a spreadsheet to a meeting down the hallway - well, now you can.

MacLite is the next best thing to throwing a two pound Mac in your briefcase along with everything else.

Built-in applications MacLite isn't a Mac. It's a completely different kind of computer, with its own built-in word processor, spreadsheet, clock, calendar, diary, alarms, and operating system.

Transfer files What makes MacLite so special is that it can exchange data with a Mac.

Create word processing files on MacLite and transfer them to your Mac in MacWrite or text format, and vice versa.

Or transfer spreadsheet files in the WKS format - download an Excel file from your Mac, make changes on MacLite, and upload the file.

HyperCard MacLite even includes a HyperCard stack for your Mac that keeps track of names, addresses, phone numbers and things to do. It's called HC Organiser™ - and it can transfer data from its own stacks to and from MacLite.

Memory MacLite has 160K of memory, expandable to over 1.5Mb.

Batteries MacLite runs on 4 AA disposable batteries for up to 20 hours, and your data is safe for months. You won't even lose data when you change batteries.

Keyboard MacLite has a silent keyboard, so you can use it anywhere - in the classroom, meetings, libraries.

Display The display is a supertwist LCD with eight lines by 106 characters.

Peripherals MacLite is only 8.25" x 11.5" x .875", but it's a complete computer, and can be used with a pocket modem, a serial or parallel printer.

Operating system MacLite's multi-tasking operating system allows you to have several documents open simultaneously, and to switch from one to another with just a few keystrokes. When you return to a document - even after switching off - you'll find it exactly as you left it, without booting, loading, opening, saving, closing or quitting.

Price MacLite is \$899 (plus \$15 shipping; 5% sales tax in ME)

To order Call 800-888-3723 or 800-366-0088. Take MacLite everywhere you go for the next 21 days. If it doesn't change your life, send it back and owe us nothing. In fact, we'll even let you keep HC Organiser (retail value \$99.95) as our way of saying thanks for trying MacLite. Cambridge North America, 424 Cumberland Avenue, Portland, ME 04101 207-761-3700.

© 1989 Cambridge North America
HC Organiser is a trademark of MAXSOLUTIONS

For the rest of us... MacLite™



Don't wait! Call 800-366-0088 today

For dealer inquiries, Call 800-888-3723

Letters

Continued from Page 24

and look how fast it is to get operating with those "high-end abilities."

► The Worx system that Julian Systems was showing at the video expo included not only the super VHS (SVHS) tape machines, but the camera, a digital sound sampler and synthesis system, animation, painting and frame grabbing ability, a Macintosh IIx, a CD-ROM player, a complete sound effects library, speakers, microphones, a drawing pad, training, and a full year service contract. That's quite a bit of gear for only \$60,000, when you consider that the closest you could get for equivalent technical abilities without using desktop video would be \$150,000.

► Goodman's comments on the breakdown of SVHS across generations of the "editing process" are inaccurate. A good computerized editing system, such as The Worx, bypasses the need to maintain and duplicate your edits across several generations of tape. You are instead going directly from your source to your master, without any intervening loss. In addition, SVHS has better image quality and resolution than most three-quarter-inch and 1-inch machines used today — 400 lines of resolution as opposed to the 300 lines that are typical in three-quarter-inch decks. In fact, a San Francisco television station, KOFY, exclusively uses SVHS for all its production and news. The decks Goodman suggests replacing for "double the price of the system" actually provide better image quality than the three-quarter-inch machines. The SVHS decks also have the added benefit of being able to play and record down to regular VHS machines. By the time a tape makes it into the hands of actual viewers, it is highly unlikely that they will be viewing it in three-quarter-inch quality at all. Most likely they'll be viewing it in VHS quality or, at best, 8mm quality.

Without desktop video you have to work in a video studio at rates that can be upward of \$3,000 per hour to get your material cataloged and edited and to have effects added. With The Worx, this rough production can be accomplished in-house for an average cost of \$8 per hour (plus labor), and a professional edit list can be taken along with the source material to a house with the appropriate effects equipment for the final cut. As technology evolves, it's reasonable to expect that these special effects will reside directly on the Mac, lowering the production cost even further. The state of desktop video today is where desktop publishing was a couple years ago: There are still areas that need improvement, but the systems work, they save money and they make it possible to produce material for far, far less than you'd pay otherwise.

*Stacey Reineckus, president
Julian Systems Inc.
Concord, Calif.*

Send letters to MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105. MCI: 323-1203, fax: (415) 243-3650. We reserve the right to edit for clarity.

MacUser FREE ISSUE/FREE GIFT

Return this card today to take a free look at MacUser—the big, glossy, monthly magazine devoted to helping you get the most out of your Mac system and software—and reserve your Free MacUser HYPERDISK! You are under no obligation to subscribe.

YES. Send me my FREE ISSUE. If I want to keep MacUser coming I'll pay just \$19.97 and get 11 more fact-filled issues (12 in all) and my HYPERDISK—FREE! Plus, I'll save 44% OFF the cover price. If not, I'll return your bill marked "cancel," keep the first issue, and owe you nothing.

For MacWEEK Readers FREE MACUSER HYPERDISK

Control your stacks with hundreds of buttons...

Get fabulous true-to-life sound effects...

Superscript with our custom font, and more!

NAME	(please print)	8H211
COMPANY		
ADDRESS		
CITY	STATE	ZIP

Savings based on annual cover price of \$35.40. Regular annual subscription rate is \$27. Please allow 30 to 60 days for delivery. Your disk will be shipped upon payment. Add \$18 for postage outside the U.S., U.S. currency only.

**NO-RISK OFFER FOR
MACWEEK READERS—
FREE ISSUE/FREE GIFT!**



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

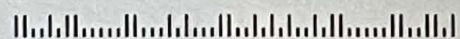
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

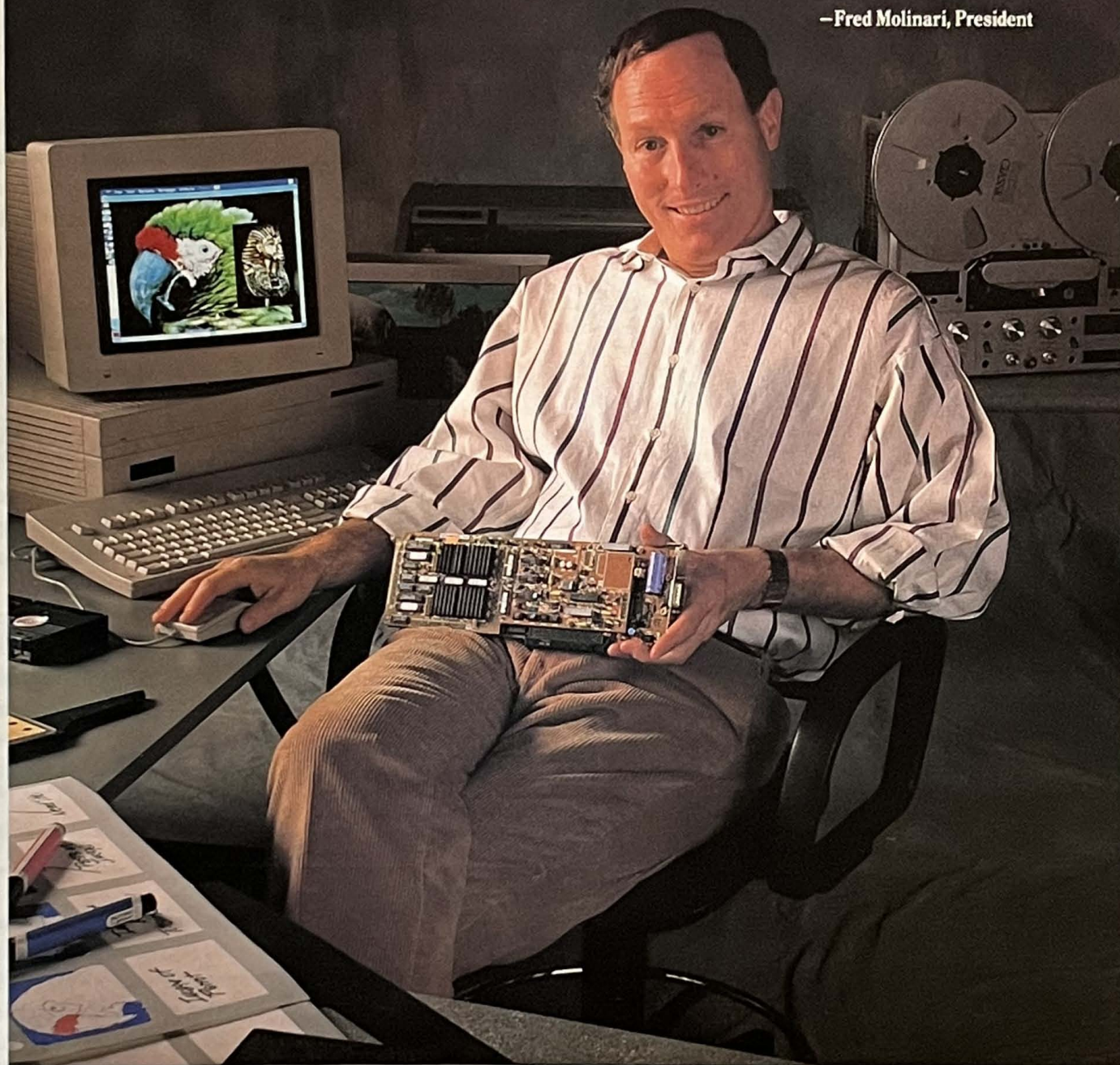
MacUser

P.O. Box 52461
Boulder, Colorado 80321-2461



"ColorCapture can turn your Mac II into a desktop video production facility"

—Fred Molinari, President



Introducing ColorCapture Frame Grabber AND PhotoMac Software

"With our new ColorCapture™ board, PhotoMac® software and your Mac™ II, you can capture images and create many of the special effects you'd normally have to go to a big video production house for ... right on your own desktop!"

"Now, you can add high production values to presentations, sales training and employee orientation videos with more control, more convenience, *at a fraction of the cost.*

"Suddenly, your Mac II can handle *up to three* NTSC or PAL input devices. Instantly, your Mac II can generate *broadcast quality* NTSC or RGB output

on tape. Incredibly, you can work with live cameras, still video and/or existing tape ... *in any combination.* Just by plugging in our Frame Grabber.

"You want *exciting* video effects? Like a desktop paintbox? Just add PhotoMac color retouching software. Then, things will really start moving. And changing. And combining. If you can imagine it, you can probably do it!"

To order, or to get a *FREE* subscription to The Designer's Portfolio, call us today.

Call 1-800-522-0265

DATA TRANSLATION®

World Headquarters: 100 Locke Drive, Marlboro, MA 01752-1192 USA □ Tel: 508-481-3700 □ Fax: 508-481-8620 □ Telex: 951646

ColorCapture is a trademark of Data Translation and PhotoMac is a registered trademark of the Avalon Development Group. Data Translation is a registered trademark of Data Translation, Inc. All other trademarks and registered trademarks are the property of their respective holders.

The Mac-HP printer connection

Output options multiply due to print drivers

By John Webster

Loyal users of Macintosh peripherals can't always get what they want from Apple or third-party output devices. A common beef is that printer prices are simply too high for many companies to bear.

Without the healthy competition that spurs price wars in the PC peripherals market, the output arena for the Macintosh has so far been subject to the pricing standard set by Apple. And that tends to be whatever the faithful are willing to spend.

But alternatives are beginning to rear their heads. A number of software products have been announced over the past several months that bestow substitute output options upon Macintosh users. Most companies responsible for the new products share a common goal: to convert QuickDraw commands to the Printer Control Language (PCL) of Hewlett-Packard's pervasive LaserJet series of laser printers.

The LaserJet series and Apple's LaserWriter series constituted 70 percent of the estimated 792,000 laser printers shipped in the United States in 1988, according to Maureen McManus, an analyst at CAP International Inc. of Norwell, Mass. Analysts said that the LaserJet comprised about 55 percent of that market share, while the LaserWriter made up about 15 percent.

Printer prices vary considerably. The street price for a LaserJet Series II printer, for example, is about \$1,600; a bottom-of-the-line LaserWriter SC lists for about \$2,700. As a result of that disparity, industry watchers are enthusiastic about the potential for drivers that give Macintosh users a low-cost alternative to Apple's printers.

"These [drivers] are long overdue," said John Wardley, senior



Steve Reiner, a principal with Urban Planning Services of Mill Valley, Calif., uses a LaserJet II with a MacJet driver to print Macintosh-generated text and spreadsheets. Since most PC laser printers emulate a LaserJet, Reiner can easily print documents while visiting clients.

analyst for Macintosh research at International Data Corp., a market research firm located in Waltham, Mass. "Mac peripherals are relatively expensive. A lot of that is due to Apple itself, but the volume hasn't been there. The sheer number of PC peripheral vendors and units going out the door keeps prices down."

One such driver comes from Emeryville, Calif.-based Insight Development Corp. The company's MacPrint program, which lists for \$149, "is a QuickDraw-to-PCL driver at its lowest level," said Russ Wood, Insight's product manager for the program.

According to Wood, MacPrint is a Chooser-level driver that operates with standard Macintosh printer dialog boxes. MacPrint uses HP printer fonts or generates bit-mapped fonts at user-selectable resolutions of 75, 150 or 300 dpi.

Officials at Intracorp, a Beryn, Pa.-based company that manages delivery of health care services to corporate clients, decided to test MacPrint after installing 20 Macintosh SEs in the span of about two months. The Macintoshes were initially brought in for MIS and graphics applications, but eventual-

ly filtered into the marketing, sales and human resources departments.

"At first we had a number of PS/2s, and our philosophy was to buy LaserJet IIs with them," said Joe Nartowicz, director of technical services at the company.

"The real reason [for purchasing MacPrint] is I had seven LaserJets and I wanted to use them with the Macs. MacPrint works very well with Microsoft Word or MacWrite. For graphics, though, I was a little disappointed, but that's compared with [output from] a LaserWriter [SC]," said Nartowicz.

A similar mixed environment prompted James M. Montgomery Consulting Engineers Inc. of Pasadena, Calif., to look into MacPrint. Keith Hatounian, PC/Mac coordinator at the company, was drawn to the program as an alternative to purchasing additional LaserWriters.

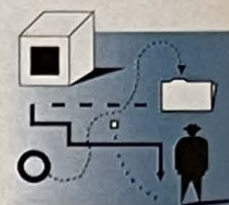
Hatounian's company generates data-oriented charts and graphics showing water tables and site plans of geographic regions where the water is contaminated. After engineers acquire data in the field, Macintoshes are used to compose charts with Microsoft Excel, Cricket Graph or MacDraw II. The graphics are incorporated into the final reports for clients.

MacPrint does not provide PostScript capability, and, according to Hatounian, the bit-mapped fonts "aren't as sharp as HP cartridge fonts. [But] if you use internal fonts in the LaserJet, it's as fast or faster than the LaserWriter II. I was surprised by how well it works."

Another link between the LaserJet line and Macintosh systems comes from Laser Connection of Mobile, Ala. The company's MacJet, which retails for \$249, provides 66 downloadable fonts in Times and Helvetica, ranging in size from 6 points to 24 points. Users can also access cartridge and resident fonts. The software prints lines, text and boxes at up to 300 dpi and graphics at 150 dpi.

Continued on Page 30

One-minute MANAGER



Bridging the Unix/AppleTalk gap with GatorBox

Mixed network users can bridge the gap between Macintoshes and Unix-based computers with Cayman Systems' GatorBox. The GatorBox is the only LocalTalk-to-Ethernet gateway that translates the Network File System (NFS) protocol supported by Unix machines, including the NeXT Computer System, into the AppleTalk Filing Protocol used by AppleShare.

Mark Ryding, a programmer and analyst at TRW's Ballistic Missiles Division in Ogden, Utah, said GatorBox has been invaluable because of its NFS features. With GatorBox, he said, Macs can freely, or "invisibly," share information with Unix machines running NFS.

Network invisibility is important to users, Ryding said, because it means they don't have to learn something new. "You want the user to feel comfortable," he said. "How information is passed is irrelevant to the user."

Ryding has used a GatorBox among his group's 15 Macs for printing and filing services for nine months and intends to buy four more GatorBoxes when the division expands to 30 to 50 Macs this year.

At Harvard University, Cayman's GatorBoxes are being used by 100 students in the Graduate School of Design for information sharing among Macintoshes and Sun workstations. "The NFS functionality of GatorBox has allowed students to download their homework on either Macs or Suns," said David Kovar, who is a technical consultant for Harvard's Office of Information Technology. "That's especially important here since we already have a lot of Suns and just started using the Macintosh last fall."

Cayman Systems is located at 26 Lansdowne St., Cambridge, Mass. 02139; (617) 494-1999.

Coping with an overwhelming number of trade shows

April brings more than just showers to the Macintosh community. Much has been said about the onslaught of Mac trade shows this month, but volume buyers tend to agree that, in this case, choice creates anxiety.

"We generally send someone to Macworld [in San Francisco in January]," said Ron Ustach, senior management systems analyst at Hughes Aircraft in El Segundo, Calif. "It's getting to the point of saturation, where there are too many shows. You can't go to all of them, so you have to pick a few key ones."

A number of Macintosh volume buyers said that they choose the trade shows according to location. Those on the East Coast attend Macworld Expo in Boston, those on the West Coast go to Macworld Expo in San Francisco. Some go to both, if they have the time and the money.

"I definitely attend Macworld in San Francisco and the Macintosh Business Conference in Anaheim [Calif.]," said Tom Mullaney, manager of systems and administration at ARCO in Los Angeles. "If they held the Boston Macworld in some other city, I might go, but I've been to Boston once too often — and in that heat ... thanks, but no thanks."

Chester Lee, a systems engineer at Raytheon in Sudbury, Mass., said that he attends Macworld Expo in Boston because, like others, he said he feels it is the most convenient location. "Many companies don't pay for employees to travel to these trade shows. [Travel expenses] come out of the employees' pockets, especially at government companies, which are staunch IBM supporters," said Lee.

Other systems managers at large companies said that because they are responsible for a computer system that is not limited to Macintoshes, they cannot limit themselves to Macintosh-specific trade shows.

Keith Hatounian, PC/Mac coordinator at James M. Montgomery Consulting Engineers Inc. of Pasadena, Calif., uses MacPrint to print data-oriented charts and graphics created in Excel, Cricket Graph and MacDraw II from his company's LaserJet.



MECHEL GILLES/PICTURE GROUP



MacinStor[™] gives you a good deal to chew on.



High-performance Macintosh[®] storage without the high cost. 45 to 180 megabytes, internal or "zero footprint" external.

Now you can give your Macintosh all the high-performance mass storage you'll ever need. And at a price that won't ruin your appetite.

Storage Dimensions' new MacinStor family of internal and external hard disk subsystems (including great looking "zero footprint" models) delivers the capacity and high performance needed for today's storage-intensive, high-end Mac[®] applications. Combined with exceptional reliability

at a surprisingly low cost-per-megabyte.

What's more, MacinStor comes with a complete, easy-to-use and install package of disk management software. You get *PC Tools*, the most complete collection of utilities available for the Macintosh. *PC Tools* includes fast backup and



restore, disk optimization, data encryption, data recovery and more. You also get a formatter, partitioning software and comprehensive documentation that's easy to follow.

Any way you look at it, MacinStor represents an outstanding value.

Compare and see for yourself. Call (408) 879-0300 today for the name of your nearest MacinStor dealer.

He'll show you how to get more bytes out of your Mac. Without taking a bite out of your wallet.



External (including zero footprint) 3.5 or 5.25 inch subsystems.

Internal 3.5 or 5.25 inch subsystems.



STORAGE DIMENSIONS
A MAXTOR COMPANY

Continued from Page 28

For fonts not resident in the printer or cartridge, MacJet will produce a bit-mapped screen font. After bit mapping the screen font at 72 dpi, MacJet will "assimilate the remaining dots" before sending the image to the printer, said Pat Domning, a software developer for Laser Connection.

Steve Reiner, a principal of Urban Planning Services in Mill

Valley, Calif., uses MacJet in a Macintosh Plus with a LaserJet II supplying the output. Reiner generates proposals and master-planning reports, which are primarily text and spreadsheets, with the system.

According to Reiner, the company was "frustrated" by Apple's printer offerings. The ImageWriter's output didn't provide the quality it required, and the laser printers were "very expensive." "Being able to do spreadsheets with line fonts or with Helvetica or Times Roman type gives the report a much more elegant look than with

Apple's [ImageWriter]," he said.

Since MacJet works with any printer offering LaserJet compatibility, Reiner can take his Macintosh to a client's office and know that just about any printer will work with the program.

Reiner said the MacJet menu arrangement is similar to the print menu on the Macintosh, but users have more choices, like dot pitches ranging from 72 dpi to 300 dpi. In addition, MacJet "is all very easy to use. When you're downloading fonts, it draws the page. And as the printer driver is re-creating the lines on paper, the page is drawn on screen," said Reiner.

A new entrant seeking to enhance output options for Mac users is GDT Softworks Inc. of Burnaby, British Columbia. The company will begin shipping JetLink Express, priced at \$149, in mid-April.

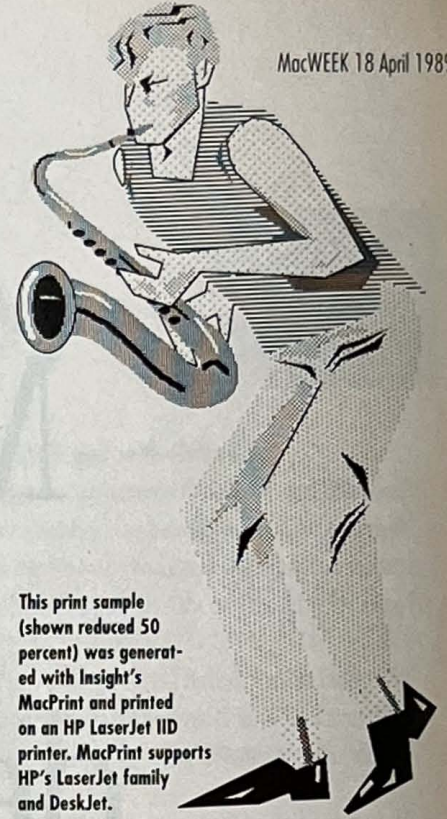
"JetLink Express [will] provide users with 13 outline fonts in four font families: Times, Helvetica, Courier and Symbol," said Jim McIntosh, sales manager at GDT Softworks.

The company also provides a

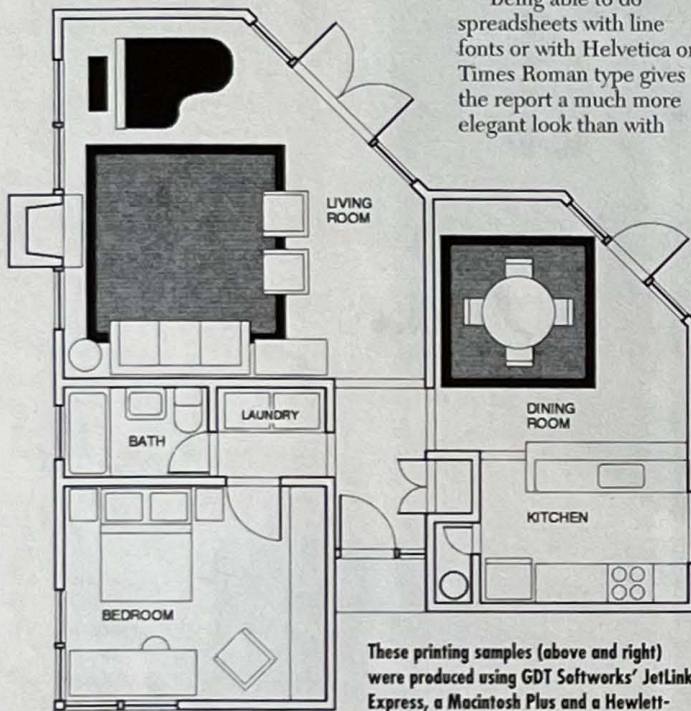
complete LaserWriter font set, which includes seven font families, or 22 total fonts. The outline fonts are scalable from 3 to 127 points, providing text quality approaching PostScript in its flexibility, according to officials at GDT Softworks. In addition, JetLink provides text smoothing, graphics smoothing, polygon smoothing, portrait- or landscape-oriented output and text rotation, according to McIntosh.

For color output, HP took control of the driver dilemma itself when the company announced the \$125 HP PaintJet Printer Interface Kit for Macintosh Computers. With the interface kit, the PaintJet will support 256 simultaneous colors on a Mac II and eight simultaneous colors on a Mac Plus or SE. The inkjet printer produces 180-dpi graphics and prints 12-pitch, near-letter-quality text at 167 characters per second.

The program was co-developed with Oceanside, Calif.-based Palomar Software. "We wanted to do our own solution, but we also needed a technical partner," said Mike Weimar, product manager for the driver at HP's San Diego division. "Apple doesn't publish much printer software,



This print sample (shown reduced 50 percent) was generated with Insight's MacPrint and printed on an HP LaserJet IID printer. MacPrint supports HP's LaserJet family and DeskJet.



These printing samples (above and right) were produced using GDT Softworks' JetLink Express, a Macintosh Plus and a Hewlett-Packard DeskJet printer.

Avante Garde Gothic
Bookman
Helvetica Narrow
Palatino
Zapf Chancery
Zapf Dingbats

Net Results

Looking toward the next wave in networking

I've worked with computers for more than 10 years now, and I guess you could say I've become a bit jaded. Luckily, I still manage to find ideas or products that can rekindle my waning interest. Such was the case when I recently read an IBM research paper about cooperative processing.

Before I go into the specifics, I should mention that research papers from IBM do not necessarily contain anything certain. They are not product announcements or even statements of direction. Instead, they simply show the direction the blue behemoth might follow.

Now for the exciting part. IBM's research paper discussed a concept the company calls "virtual service request," or VSR. In essence, a VSR can be thought of as an application request for data, but with a crucial difference. If the data is unavailable locally, the request will be passed around the network, from node to node, until the information is found.

What's exciting is that this will happen without any user involvement. In all likelihood, users won't even know that the data didn't come from their machines. Such a setup

means the network itself will have to be intelligent, a technology that is still off in the not-too-distant future. But the groundwork is already in place, and it is IBM's application peer-to-peer communication.



BY PETER LISKER

APPC will play a major role as the underlying technology needed to support this new approach because it permits peer-to-peer computing. For Mac users and network managers alike, the possibility that data from around the network could be transparently accessed and retrieved by a desktop application (all without user intervention) is heady stuff.

But beyond this approach to virtual data access, I'm particularly excited by how I think Apple could take advantage of this concept. I predict Apple will use it as the basis for developing intelligent network "agents," especially in view of the CL/1 technology that

Apple already has in-house.

CL/1 is the connectivity language (from Apple subsidiary Network Innovations) that Apple is pushing as a universal language for hooking up different databases and operating platforms. Apple and Network Innovations have said that CL/1 will be integrated into the Macintosh system at a fundamental level, and I foresee it becoming as much a part of the Mac as the graphical user interface.

CL/1 could be extended, at least theoretically, to include the intelligence necessary to query a system for desired data, then either retrieve it or move on to the next connected system. This would be a logical way to proceed because the language would know what's on the network and could pass information between systems and users.

I'm not saying that turning CL/1 into an intelligent network agent would be trivial. Far from it. But the architectural basis is there, and I think Apple is certainly up to the job.

Apple could also develop the idea of network agents that run as a background task in the operating

system. In this mode, there could be a database agent, either resident or in some way affiliated with the OS, that would assemble data for processing. Regardless of whether the data resides locally or remotely, the database agent would find and retrieve it for the application. (Yes, this is plausible.)

There is historical precedent for applying virtual concepts to current systems. In the early days of computers, programmers had to explicitly state where a particular piece of data would be found. But with the advent of virtual operating systems, like VM and MVS for the IBM mainframe, programmers could simply name the data set and let the operating system and file management facilities do the rest.

A network that provides virtual service requests extended into OS-level network agents would benefit users tremendously. By eliminating the difficult task of locating and retrieving information, such intelligent networks could finally free desktop users from worrying about the technical side of connectivity and let them concentrate on their applications instead.

so we [contacted Palomar]."

The program's interface is designed for business and technical professionals who are composing reports and presentations that merge color with text. The printer's ability to handle transparencies makes it ideal for presentations, Weimar added.

Industry observers said that attaching the Hewlett-Packard name to a Macintosh driver will lend it credibility in users' eyes. "[Now that] HP's label is put on the driver, the product will really take off," said IDC's Wardley. "Big end users have a tough time relying on some of the smaller companies. HP legitimizes it a bit."

The HP PaintJet fills a gap in the low-cost color output market by producing more colors than Apple's ImageWriter II. The ImageWriter II, for example, prints a maximum of five bands of color compared with the PaintJet's eight colors, according to Brian Maciag. He beta-tested PaintJet/Mac for computer dealer Basic Computer Corp. of Akron, Ohio, where he works as support manager for corporate electronic publishing systems.

According to Maciag, the PaintJet/Mac driver should satisfy entry-level Mac users who want to see printed documents with more colors as well as mid-level users composing presentation graphics on transparencies.

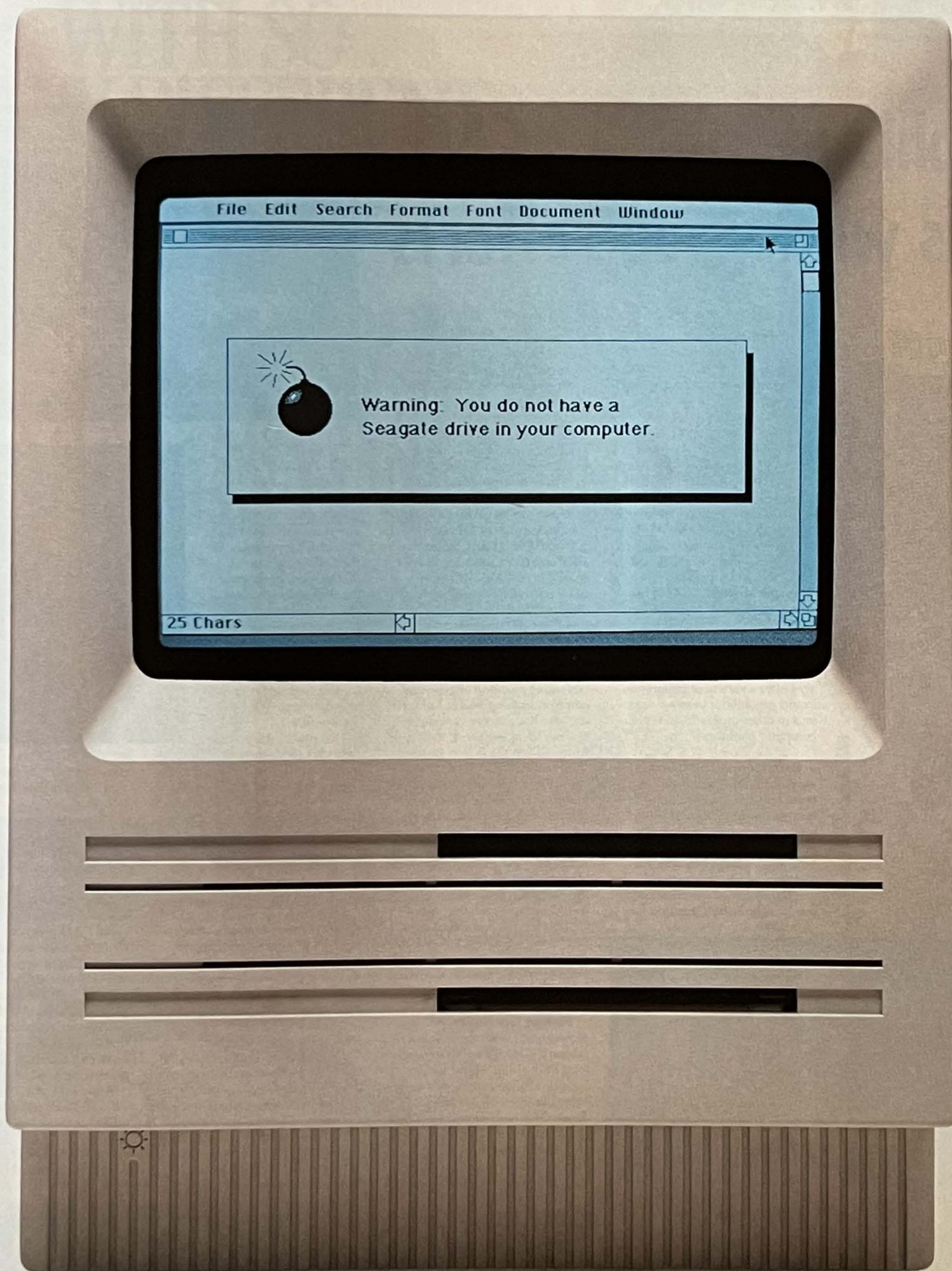
GDT Softworks can be reached at P.O. Box 1865, Point Roberts, Wash. 98281; (604) 291-9121; (800) 663-6222.

Insight Development Corp. is located at 2200 Powell St., Suite 500, Emeryville, Calif. 94608; (415) 652-4115; (800) 825-4115.

Laser Connection is located at 7852 Schullinger Park W., Mobile, Ala. 36608; (205) 633-7223; (800) 523-2696.

Hewlett-Packard is located at 19310 Pruneridge Ave., Cupertino, Calif. 95014; (415) 857-1501; (800) 752-0900. □

John Webster is a free-lance writer based in Boston.



Don't take chances. Ask for Seagate.

 **Seagate**

The first name in disc drives

Sophisticated Mac CAD aids work group efforts

People using CAD software for large design projects cannot allow their applications to have a failure to communicate.

By Philip Robinson

Generally, sophisticated CAD is work group CAD. That's because engineering and architectural designs are often the work of a group. Several designers may work in parallel on portions of a project (horizontal teamwork), or a single project may move from designer to drafter to manufacturer (vertical teamwork). Even projects handled by an individual within one company can often be considered "group" projects, with members working for different companies, including customers and suppliers.

Simple Macintosh CAD programs are aimed at individuals, providing an environment for drawing images, saving them on disk and then printing them. The more sophisticated CAD packages offer a variety of import and export capabilities to move drawings to other programs and other computer platforms.

Exchanging files the CAD way. Certainly the most basic tenet for work group CAD is the easy exchange of files. At a minimum, that means the ability to import and export files through DXF (AutoCAD's exchange format) and IGES (international graphic exchange specification, the CAD industry's standard for-

mat) so that files can be moved to other Macintosh, PC and main-frame CAD programs.

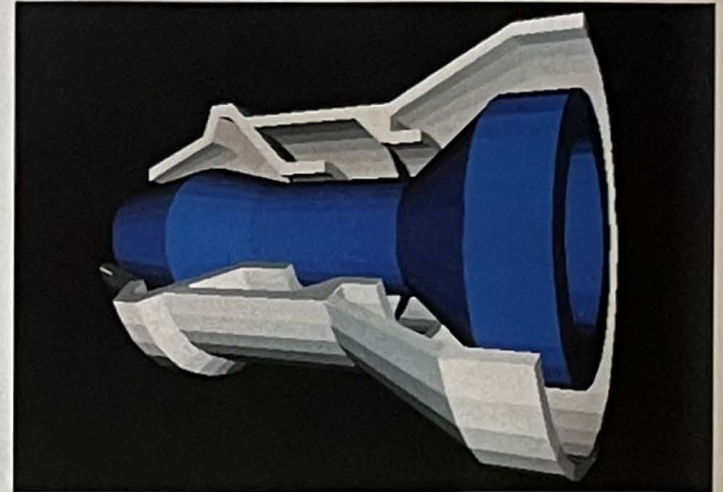
Most sophisticated CAD programs, including VersacAD's VersaCAD, Origins from Deltasoftware, Autodesk's AutoCAD and IN-CAD from Infinite Graphics provide at least one exchange format.

Users whose programs do not have standard CAD exchange formats can turn to CADMover from Kandu Software of Arlington, Va. In addition, Claris Corp. claims that its DXF and IGES modules, due for release in mid-May, will provide a more accurate representation of objects than the translation facilities found in CAD programs.

Kevin Peterson uses VersaCAD/Macintosh Edition to design electrical systems for Sparvan, a consulting electrical engineering company in Long Beach, Calif. He deals with architects, civil engineers and electrical engineers, most using AutoCAD on the PC, so, he said, DXF and IGES are vital for his work. For this cross-company work group CAD, Peterson said he is pleased with the quality of VersaCAD's translation facility.

The new AutoCAD for the Mac, which has only recently started shipping, provides another type of file portability. According to an Autodesk representative, AutoCAD's files, macros and custom menus will be completely portable and compatible among AutoCAD Release 10 programs on the Mac, PC and even workstations.

Testing the limits. A drawn picture isn't always the only information a CAD file needs to produce for a work group. Many designs must be analyzed and tested before manufacturing. That creates a demand for finite element analysis (FEA). Here, a "mesh" of properly positioned nodes represents a solid object. That mesh helps designers analyze how stress and vibration



affect each discrete element of a solid surface.

Engineers can create a mesh by hand, calculating the proper points and entering their coordinates into an FEA program. Or the CAD program can do this work itself, creating the mesh automatically. Visual Information's Design Dimensions does just that, creating the proper file for FEA, then importing that mesh into the MSC/pal program from MacNeal-Schwendler.

One step in design that hasn't been closely linked to drafting, testing and manufacturing is solids modeling. Three-dimensional Mac graphics programs have functioned mostly as artistic sketchpads, not as engineering tools. The only way to move such models to other steps in a group design process has been as a simple PICT file. This tradition is dying.

Drafting packages like VersaCAD, AutoCAD and MiniCad+ are sprouting 3-D, wire frame and surface modeling abilities. In addition, solids modeling programs like Presenter (formerly Visual Information's Solid Dimensions) and IN-CAD are intimately linking conceptual design work to the rest of design.

IN-CAD, for example, can automatically perform preliminary engineering analysis on a model, serving up density, volume, first and second moments of inertia, and radius of gyration. It can even manage interference checking, such as testing if bolt A will fit in drill hole B.

The resulting model can be



passed directly to the two-dimensional drafting package that is built into IN-CAD.

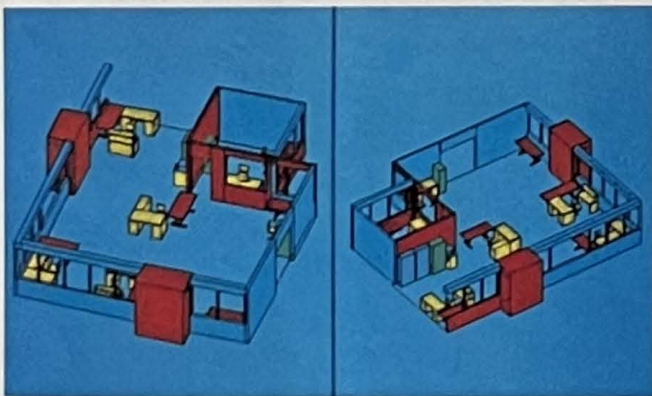
Presenter can model and animate images and exchange files with MacDraw or with the Design Dimensions drafting program.

Sharing the database. Another feature in many sophisticated CAD programs is access to the database underlying the image. This is sometimes known as a "bill of materials" feature because it lets users assign costs to various objects in the design, then get an automatic summary of the entire project. VersaCAD comes with a HyperCard stack for generating a bill of materials.

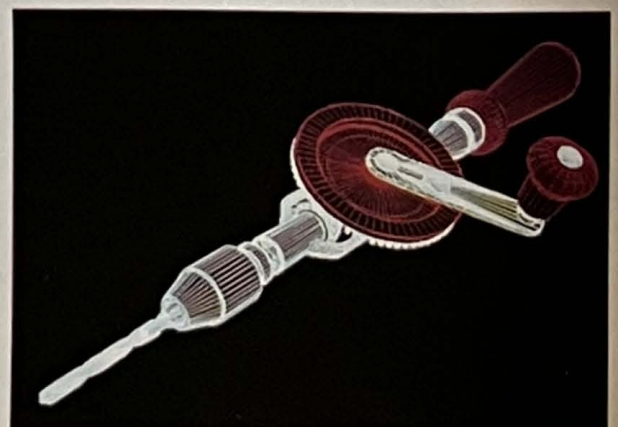
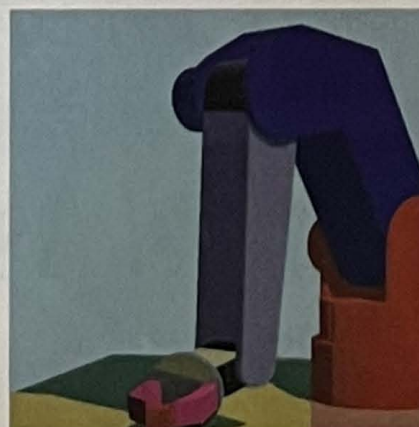
AutoCAD, ICG Technology's PEGASYS Expert and a number of other CAD packages offer similar features.

MiniCad+ from Graphsoft does not have a standard bill of materials

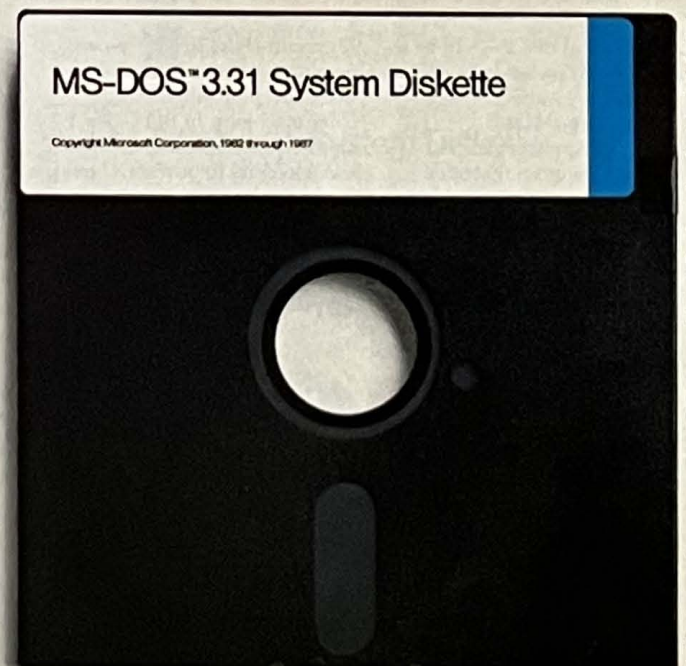
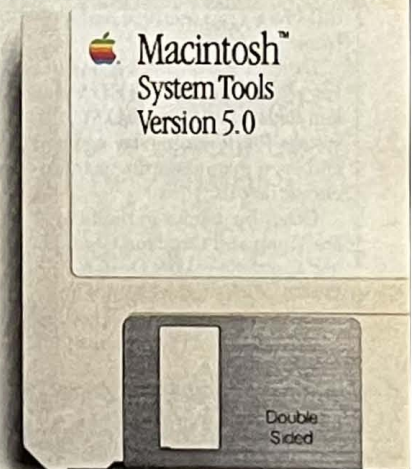
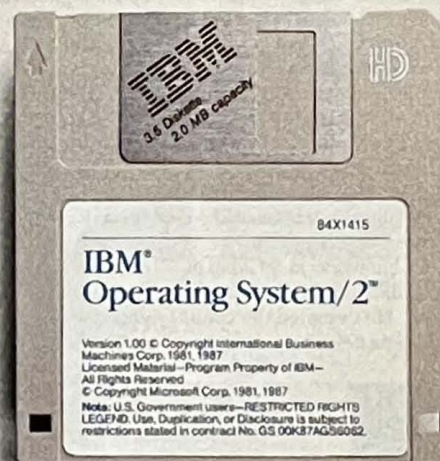
See Group CAD, Page 36



The illustration in the top right corner was created in Origins from Deltasoftware. Shown clockwise, other graphics were generated by MiniCad+ from Graphsoft; AutoCAD from Autodesk; Presenter from Visual Information; and VersaCAD/Macintosh Edition from Versacad.



WITH SO MANY DIFFERENT OPERATING SYSTEMS TO CHOOSE FROM, WHERE DO YOU DRAW THE LINE?



©1988 IBM Corporation. IBM is a registered trademark of IBM Corporation. The IBM logo, IBM and Operating System/2 are trademarks of International Business Machines Corporation. UNIX is a registered trademark of AT&T Intellectual Property. MS-DOS is a trademark of Microsoft Corporation. The Apple logo is a trademark of Apple Computer, Inc. Digital Equipment Corporation's VMS is a trademark of Digital Equipment Corporation.

Electronic design needs special CAD

Few options exist for electrical CAD

By Philip Robinson

Although you can use a drawing or drafting program to create electrical and electronic circuit diagrams, all you'll be left with when you're finished is pretty pictures.

Traditional CAD packages can help document circuit designs, but they cannot help you see what waveforms a circuit might produce, check whether inputs and outputs to the circuit are mismatched, or generate the artwork necessary to actually manufacture systems, boards and chips.

For that you need electronic design automation software, which knows electronic rules, silicon standards and circuit board conventions. Only a handful of third-party vendors sell tools to handle the tasks faced by electrical and electronic engineers.

Douglas Electronics is one of the key players in the Mac EDA market, with its Douglas CAD/CAM system for designing, laying out and even manufacturing printed-circuit boards.

Other big names in the field are Vamp and Capilano Computing. Capilano makes DesignWorks, a schematic capture and simulation program. Vamp offers a suite of McCAD programs for

electronic design and analysis.

Additional players in the Mac EDA market include BrainPower and BV Engineering.

Electrical system and circuit conception. Using CAD to design electrical systems requires software that can handle "black boxes" with defined inputs and outputs. Capilano's DesignWorks and BrainPower's DesignScope let users hook icons of various electronic parts together on screen, then observe the simulated behavior of the resulting circuit.

DesignWorks handles all schematics and digital simulation; DesignScope also tackles analog simulation. Capilano will soon unveil a new product, modular electronic design application (MEDA), which will allow customers and developers to add external code modules to DesignWorks.

Nicholas Karaynakis, who teaches electronic technology at the University of North Florida in Jacksonville, uses DesignScope to "connect modules, scale them, give them particular individual parameters and go on from there," he said. "We'll use it to design heavy systems, complicated phase-locked loops, and filters and signal processing involving different types of modulation."

John Brisbin works at SiClone in Milpitas, Calif., a maker of Mac peripherals. He designed the company's 33-MHz 68030 accelerator

using DesignWorks. He liked its combination of digital circuit simulation and schematic capture. The simulation "allowed me to make a lot of my mistakes electronically, rather than in debugging," he said.

Analog circuit simulation is a new frontier on the Mac. Two descendants of the popular SPICE simulation program from the University of California, Berkeley have appeared in Macintosh guise. MacSpice is newly available from Capilano, and PSpice has been out for two years from MicroSim. Analog schematics from DesignWorks can be run in simulation by MacSpice. PSpice follows the Macintosh interface, except where SPICE conventions dictate use of ASCII netlists for input and output.

Frank Smith and Bob Irvine are professors at California Polytechnic State University, Pomona. They use PSpice to teach electronic engineering, and lean heavily on a suite of AC and DC analysis programs from BV Engineering. Smith remembered "working on a device patent where we did the analysis on the BV software, then built the actual circuit in the lab. It followed the plot right on the money."

Although BV Engineering's programs have been around for several years on Macs as well as IBM PCs and compatibles, only two programs have been converted to a true Mac interface: ACNAP and DCNAP.

PCBs and PLAs. Once the design is complete, it's time to make it real. The printed-circuit board (PCB), integrated circuit (IC), programmable logic arrays (PLAs) and hybrid circuits are four classic types of circuits. The Mac can now help design any of the four, although it is far more experienced with printed-circuit boards.

The two contenders in PCB

design and manufacture are Douglas and Vamp.

The Vamp McCAD programs handle schematic capture, PC layout, digital simulation and other related functions. Jeff Tingley of Sunnyvale, Calif.-based RasterOps uses Vamp's schematic capture package to design graphic add-on boards for the Macintosh.

Although "McCAD suits our needs perfectly," Tingley said, he said he looks forward to having "back annotation" in McCAD so that modifications in the netlist can be automatically changed in the original design.

Daniel Melnechuk at ISIS Design, an engineering consulting company in Brookline, Mass., uses Vamp software to design real-time digital filter boards with everything "from ECL through CMOS parts" for a medical imaging system. He, too, looks forward to back annotation and to a compiler for programmable parts, which would allow him to directly design the "whole class of PALs, PLAs and GALs, to write logic equations in a high-level language and get back a description of the chips' logic."

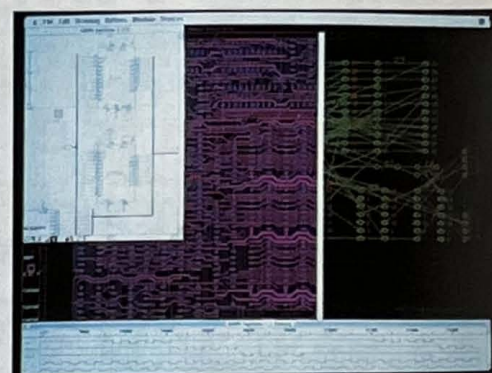
Coincidentally, Capilano has recently introduced the LPLC logic device compiler, which handles such tasks. SiClone's Brisbin used it to develop the PAL logic for the company's 68030 accelerator board. LPLC ties directly into DesignWorks.

The Douglas CAD/CAM system takes printed-circuit board work one step further than Vamp's McCAD.

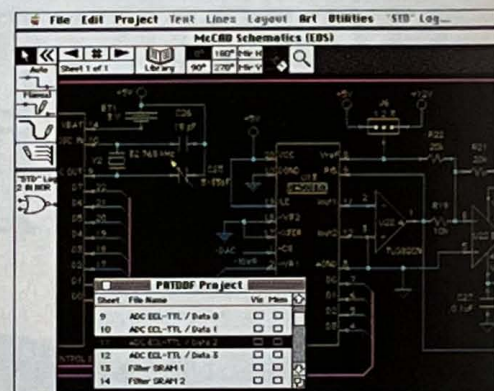
Vamp's software can generate standard Gerber photoplots and files that any printed-circuit fabrication facility can use to make the boards. Douglas' CAD/CAM system includes the key to Douglas' own printed-circuit board facility. After designing, laying out and simulating the board's logic, users can send the finished files to Douglas for small-volume, prototype board manufacture.

Bill Fabry of Scotts Valley, Calif.-based Seagate is analyzing the disk drive company's surface-mount process, looking for the most efficient lands (positions for chips) on a circuit board. He uses Douglas' CAD/CAM system, sends files through a modem to Douglas and gets back a prototype board within three days to two weeks.

"I liked the way the package worked and the fact that I could turn around without worrying about



Users can go from Mac to factory with Douglas' CAD/CAM system.



This schematic capture was created in McCAD from Vamp.

photoplotters," Fabry said. "The package has improved dramatically since I started using it, and I'm looking forward to improvements, such as metric to English conversion and design-rule checks."

ICs and hybrids. Finally, there's the cutting edge of electronic design: putting circuits on silicon chips. This work requires entirely different software from what you'll find in the printed-circuit board world. There are really only three packages for the Mac.

First, there is Capilano's LPLC logic compiler for determining how to complete programmable logic chips. Then there is the MacGDS package from DKL Technology for making integrated circuits and hybrid circuits, tiny circuit boards that directly connect naked chips on near-micron-size traces and printed resistors.

Finally, Paracomp announced MacVLSI, the first Mac program for designing custom VLSI chips. Scheduled to appear in "several months" and "certainly in 1989," according to Paracomp officials, MacVLSI will be able to output Cal Tech Intermediate Format files—just what a silicon chip factory needs to manufacture a chip—although it will not simulate the chip at work. The program will cost approximately \$3,000.

Pieces still missing. EDA for the Mac is still a spotty affair. Although new programs such as Capilano's LPLC and Paracomp's MacVLSI have extended its range beyond printed-circuit boards to integrated circuits, there are missing pieces in each area.

Back annotation, netlist checking, simple export and import of EDIF files (the standard exchange

See Electronic CAD, Page 37

The Art of the Possible

How far can you stretch it before it breaks?

Apple has said that this will be a year of new CPUs. But how will the new machines affect compatibility with existing Macs?

Every time Apple comes out with a new Macintosh that adds enhanced features, the gap between the latest machine and older Macs widens. As good as the new Macintosh model may be, you can only stretch a system so far before it breaks.

This, you may remember, was one reason behind Steve Jobs' contention that the Macintosh has peaked. After about five years, he said, the weight of maintaining backward compatibility plus the strain of fitting new ideas into an aging model catches up with a computer system. His solution, not coincidentally, is to switch to a new machine.

Over on the DOS side, IBM and

Microsoft chose to write a new operating system rather than maintain compatibility with older machines. In Bill Gates' often-repeated phrase, the break was necessary to provide a better foundation for "the next 1,000 great applications."

Similarly, Lotus recently announced that it would provide a separate version of 1-2-3 for older 8088-based computers rather than

hobble more advanced CPUs with one compatible version.

Thus far, Apple has chosen another route. The company has made a large and continuing effort to keep one system



BY STEVE ROSENTHAL

and one programming model running on everything from the smallest Macintosh Plus to the most souped-up Macintosh IIx. Many features and programs even run on Mac 128s and 512s, although it helps to have additional memory and the current ROM chips.

But I would argue that this era may be coming to an end. One reason is the competition. As other machines become more graphical, Apple's interface will no longer be sufficient to put it on top. As competing machines begin to exploit more-advanced chips, computers that do not will fall behind. And as NeXT, Sun and other workstation companies bring out personal productivity applications, the standard for what could and ought to be possible on the desktop will continue to rise.

See Rosenthal, Page 36

ANYWHERE YOU WANT.

At 3Com, we can take computers running any or all of the operating systems on this page and combine them into a single, integrated network.

Making incompatibility among operating system software virtually a non-issue.

Be it in workgroup, departmental or enterprise-wide networks.

In fact, we network more types of systems to more types of systems than anyone else.

Because we make more modular networking products than anyone else.

Everything from network operating

systems to adapter boards to mainframe connections. Each one built upon a platform of leading industry standards. And each one designed with the flexibility to change as your needs change.

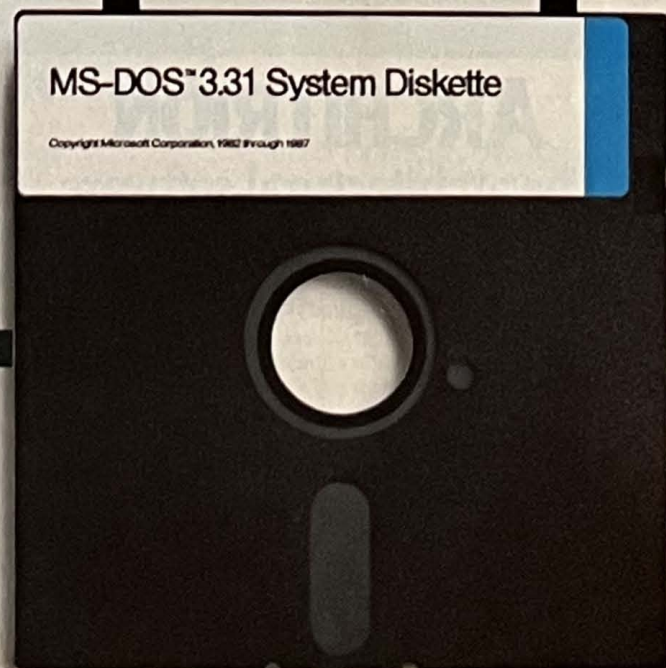
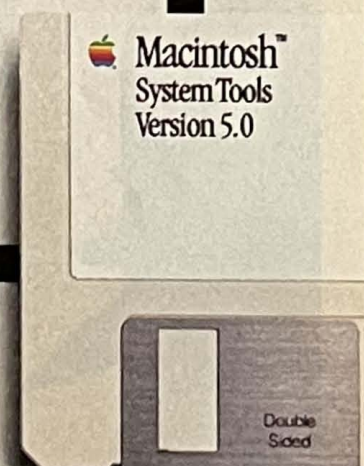
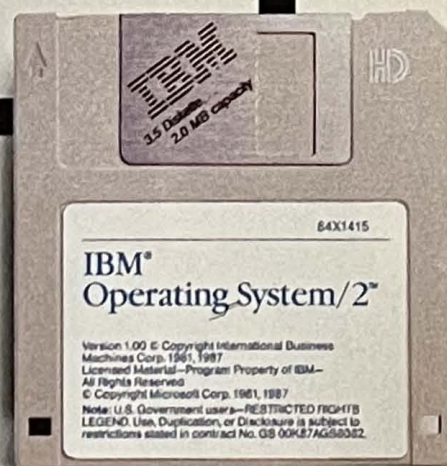
It's also reassuring to know that we offer a variety of comprehensive service and support options.

So take a look at your list of preferred vendors. If 3Com isn't on it, maybe you should call 1-800-NET-3Com, Dept. BE.

After all, you're going to have to draw the line somewhere.

3Com

We network more types of systems to more types of systems.



Rosenthal

Continued from Page 34

To meet those challenges, Apple will have to make use of its evolving hardware. Certainly, for developers to produce innovative new applications they need a rich and supportive programming environment. You cannot expect developers to do their best work if they have to ignore such facilities as the 68030, memory management, color and large-screen displays.

A segmented strategy for Apple also makes sense because of the Mac's expanding

installed base. As Apple sells more Macs in each class of machines, each segment will continue to grow. If, for example, the Mac IIx is the hit that Apple predicts it will be, the number of Mac II series machines alone can support a broad range of programs that are not compatible with the Mac Plus or SE.

Just adding more memory, bigger disks or the latest system software to an older machine won't necessarily bridge the gap. We're seeing some Mac II-only programs, mostly those that need color or gray-scale screens. A few specialized engineering pro-

grams need math coprocessor chips, and some engineering, scientific and business programs need the 68030.

I believe we'll see a lot more programs intended for this segmented model. We will, I predict, even see a 68030-only (or at least a required memory management unit chip) version of the operating system, as A/UX already requires. We will see more applications that need a minimum number of screen pixels. And we will see a "baby Mac" (just don't call it a MACjr) for people who don't need a full range of advanced capabilities. □

Group CAD

Continued from Page 32

feature. Instead, it offers an integrated spreadsheet that can be linked to objects in the drawing.

Robert Anderson uses MiniCad+ in his interior architecture work at Valle Anderson Associates in Austin, Texas. His company is "writing a routine to use the spreadsheet to log drawing work," such as how long each person works on different projects.

That flexible feeling. A vital element in sophisticated CAD is flexibility. Macros and built-in customization languages extend the reach of a CAD package, allowing third-party developers to tailor it to the hundreds of specialized disciplines in engineering and design.

For example, AutoCAD offers AutoLisp for customizing and extending AutoCAD. VersaCAD 2.0 has a customization capability to interface with any program written in assembly, Fortran, BASIC or Pascal, with hooks to the main program and to QuickDraw. PEGASYS has macros, and MGM-Station provides the MicroConcepts' Vector engineering development environment, based on object-oriented programming. Avi Lipski, president of Micro CAD/CAM, said he foresees engineers using the MGMStation/Vector combination to "write the applications that will solve their specific problems."

Ability to communicate. CAD groups need to communicate just as any work groups do, with or without computers. Although many CAD users are networked, particularly with LocalTalk, few do more than share symbol libraries or drawing files over the network.

"We've found out that CAD applications are so CPU-intensive that delays over a network are counterproductive," said George Soluk, engineering vice president of Vamp, which develops electrical CAD applications. "You're better off using centralized file servers to hold design files" and doing the real work locally.

Bob Waddell of MCG and Associates, an architectural company in Irvine, Calif., where the Macs are hooked up on LocalTalk, said: "I've thought of going to Ethernet or even token-ring, but it would cost \$1,500 per seat, whereas LocalTalk costs only \$800 for the entire office. We can live with the speed."

Groups are organized at MCG so that a project architect, a job captain and a drafter all work on a single set of drawings kept on a file server. "One person does the site plan or floor plan, then another takes that to make the elevations, and, finally, a project manager adds comments," explained Waddell.

Those comments are easily attached to the drawing with VersaCAD's text stack. It's vital, Waddell said, to coordinate in advance who will handle what in a group CAD project.

Anderson of Valle Anderson Associates agreed that "it's important [in group CAD] that everyone be trained alike in the protocol of using the software." Such protocols include naming the latest file correctly and not saving new symbols under old names.

Moving toward the big time. Eventually, Mac CAD software may grow to allow hierarchical design efforts, where a single database can track all the versions of all the drawings in a system. From the initial sketch and descriptive memo through scheduling, electronics, simulation, packaging, manufacturing and advertising, work might be done in a Mac environment.

When that happens, Macintosh users might find that the definition of CIM could be "Conception to Inventory on Macs." □

See Us At the MacWorld Expo
Washington DC Convention Center
April 25-28, 1989
Booth #1136



ARCHITRION

The architectural software you've been waiting for.

Created by architects for architects, Architrion™ is a powerful CAD software package for use on the Macintosh™ computer. Its many features and ease-of-use allows you to maximize your creative abilities at every stage of the design process — from conception to completion. Architrion is available in two versions: the original black

& white version and our advanced full-color Architrion II™ now featuring: create and modify in section; multicolor shading in perspectives and elevations with shadows; and DXF import/export.

Explore your most complex ideas in minutes. With Architrion, quickly build your schematics, produce alternative

studies and base your decisions on a realistic 3D representation of your design.

Experience a better relationship with your clients and consultants. Architrion allows you to communicate your ideas effectively. Walk throughs, details, modifications or enhancements take shape in a few minutes as you easily produce any interior or exterior perspective, axonometric or isometric, section or plan.

Document your design any-time and get take-offs along the way. While designing, send your automatically generated plans, sections and elevations to the drafting module for further

delineation (before printing or plotting). And, at any moment, check your construction costs with Architrion's estimating module.

ARCHITRION
The essential tool
for today's architect.

For more information, or to find out the name of your nearest dealer, contact us today.

Gimeor
PROGRESSIVE CAD SOFTWARE
420 10th Street S.E.
Washington, DC 20003
Telephone: (202) 546-8775

Product Info**Autodesk**

AutoCAD for the Mac: \$3,000
2320 Marinship Way
Sausalito, Calif. 94965
(415) 332-2344

BrainPower

DesignScope 1.15: \$2,499.95
30497 Canwood St.
Agoura Hills, Calif. 91301
(818) 707-1712

BV Engineering

ACNAP3: \$349.95
DCNAP2: \$199.95
2023 Chicago Ave., Suite B13
Riverside, Calif. 92507
(714) 781-0252

Capilano Computing Systems Ltd.

LPLC 1.1: \$535
LogicWorks 1.34: \$199.95
DesignWorks 1.2: \$685
MacSpice 1.0: \$1,500
1165 Hamilton St., Suite 501
Vancouver, B.C., Canada V6B 2N2
(604) 669-6343

Deltasoft

Origins 1.0 with color: \$595,
black-and-white: \$495
P.O. Box 55089
Tulsa, Okla. 74155-5089
(918) 250-5594

Graphsoft Inc.

MiniCad+ 1.0: \$695
8370 Court Ave., Suite 202
Ellicott City, Md. 21043
(301) 461-9488

DKL Technology Inc.

MacGDS 2.0: \$8,200
11 Donex St.
Point-Claire, Quebec, Canada H9R 4Z3
(514) 694-9773

Douglas Electronics Inc.

Douglas CAD/CAM system: \$95 to \$1,500,
depending on modules
718 Marina Blvd.
San Leandro, Calif. 94577
(415) 483-8770

ICC Technology

PEGASYS I: \$695; PEGASYS II: \$1,795
PEGASYS Expert: \$1,295
305 Lennon Lane
Walnut Creek, Calif. 94598
(415) 945-7300

Infinite Graphics

IN-CAD: \$1,945
4611 E. Lake St.
Minneapolis, Minn. 55406
(612) 721-2460

MacNeal-Schwendler Corp.

MSC/pal: \$1,495
815 Colorado Blvd.
Los Angeles, Calif. 90041
(213) 258-9111

Micro CAD/CAM

MCMStation 2.5: \$999 to \$1,399
5900 Sepulva Blvd., Suite 340
Van Nuys, Calif. 91411
(818) 376-0005

MicroSim Corp.

PSpice: \$1,450 without options
20 Fairbanks
Irvine, Calif. 92718
(714) 770-3022

Paracomp Inc.

MacVLSI: \$3,000
123 Townsend St.
Suite 310
San Francisco, Calif. 94107
(415) 543-3848

Vamp Inc.

McCAD EDS-1: \$1,495
PCB-ST: \$995
6753 Selma Ave.
Los Angeles, Calif. 90028
(213) 466-5533

Versacad Corp.

VersaCAD/Macintosh Edition:
\$1,995
2124 Main St.
Huntington Beach, Calif. 92648
(714) 960-7720

Visual Information

Presenter 1.01: \$495
Design Dimensions 2.05: \$1,595
16309 Doublegrove
La Puente, Calif. 91744
(818) 918-8834

Electronic CAD *Continued from Page 34*

format for EDA programs), full simulation in analog and digital and design rule checking are not yet implemented in every package. Nor are there the variety of post-processors and utilities you can find in the DOS world. As more Macs sell, however, especially the newer generation, with '020 and '030 processors, the Mac will attract more developers. And if Apple turns its light on EDA, maybe even the next generation of PCs will be designed on Mac screens. □

We Wrote the Book On Monitors



Introducing the Viking 2

The Viking 2 is a finely-tuned, fully ergonomic design. It is Moniterm's second generation monitor. And its performance is marked by our ***publishing resolution*** for a "real page" environment. ***Flicker-free refresh*** for a tack-sharp, rock-steady display. ***Square pixels*** for precise imaging and characterization. ***Ultra-high efficiency phosphor*** for a paper-white, easy-on-the-eyes screen. And the beautiful finishing touch — ***OCLI™***

HEA glass-bonded anti-glare coating. No reflection on you — the Viking 2's appearance simply ***can't*** be matched.

Moniterm provides software drivers for hundreds of programs with every monitor and every monitor is bundled with a ***matching con-***



troller for precise, high-speed performance with your computer.

The Viking 2 is part of Moniterm's family of 18 products. 19- to 24-inch monochrome, gray-scale and color monitors are available for Macintosh and IBM computers, and 19-inch monochrome for Commodore and Atari computers.

We wrote the book on monitors: ***How to Buy the Right Monitor.*** Call or write for your free copy today.

See our new Viking 21-Inch Color Monitor at MacWorld Expo
BOOTH #525

MONITERM

5740 Green Circle Drive Minnetonka, MN 55343 (612) 935-4151 Fax # (612) 933-5701

MacWrite II offers state-of-the-art WP

Reborn product
meets users' needs



RICHARD FOLKERS

MacWrite II

Clarix Corp.

440 Clyde Ave.
Mountain View, Calif. 94043
(415) 960-1500

List price: \$249; \$65 upgrade for MacWrite 5.0 users; \$75 upgrade for Microsoft Word, Works, Write, WriteNow and WordPerfect users

✦ Easy-to-use midrange word processor with a good degree of power; wide range of import/export file types; smart quotes; expanded Find/Change can change text and font attributes; multiple, editable, on-screen columns; can directly import PICT and bit-mapped graphics; color; mail merge; spelling checker; and thesaurus.

✦ No multiple headers; headers limited to left, right or all pages; text cannot wrap around graphics; no condensed or expanded text; hyphenation limited to entire document rather than selection.

By Rick LePage

Considering the slow decline and obsolescence of the Macintosh's first word processor, MacWrite, many people reacted to Clarix' announcement of MacWrite II with bewildered amusement. Adding Roman numerals to the name suggested to some that users would be getting a piecemeal face lift to the aging progenitor of Mac word processing.

After using the new program, it is apparent how wrong that prediction is. MacWrite II builds upon the ease of use of its predecessor and takes off in a wholly new direction, one that brings the program totally up to date.

The most surprising thing about MacWrite II is that it is not MacWrite. Few, if any, of the features of the earlier program are unchanged in the reborn product. Clarix has thoughtfully and carefully designed, from the ground up, a program that is facile, powerful and thoroughly in line with current state-of-the-art word processing. The company has paid attention to the trends in program design and demands from users, and the end result shows it.

Basics. MacWrite now has the traits we have come to expect in a standard word processor, including

multiple column text, page edges and invisible characters in a WYSIWYG display; graphics placement (PICT and bit-mapped images); mail-merge capabilities; a spelling checker; thesaurus and more. These features might seem run-of-the-mill to people accustomed to more-powerful programs, but many professional users have no need for table of contents generation, bibliographic citations or Bezier curves in their everyday word processor.

One of the most often-cited limitations of MacWrite has been put to rest: MacWrite II can open up to seven documents simultaneously. It can also open and save documents in any one of eight file types: MacWrite II and MacWrite II stationery; MacWrite 5.0; Microsoft Corp.'s Word 3.0, Works 1.1 or Write 1.0; T/Maker's WriteNow 1.0 (although we were able to open and save documents correctly with WriteNow 2.0); and plain text. It is odd that the program does not support Microsoft's Rich Text Format (RTF), which has become a standard interchange format for Macintosh word processors. MacWrite 4.6 format is also a standard, yet MacWrite II can't save in that, either. Considering that many companies change file formats with a program upgrade, it would be nice to have a more-universal filter.

MacWrite II also has a number of characteristics, small and large, that set it apart from other midrange word processors like Microsoft Write and WriteNow. Some of the little things are impressive, like color text capability, hyphenation, a reduced view

that allows on-screen editing, multiple date and time formatting options, and the ability to create tabs that align on any character you choose, not just the usual decimal point tab. Like WriteNow, MacWrite II has a "smart quotes" algorithm built in, which allows users to generate typographic quotation marks without having to use special key combinations.

More-significant improvements include:

▶ The ability to search for and change font attributes and invisible characters as well as text.

▶ The use of stationery files, which allow the creation of stock document types, or templates, that contain preset margin and type information.

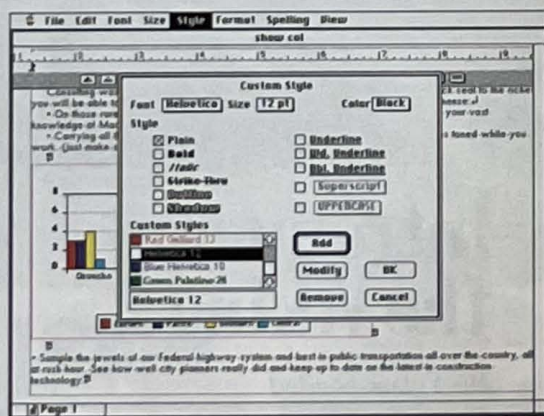
▶ Global styles that allow you to create a font, size and style set for easy application to any text.

▶ Graphics that can be scaled easily via a dialog box, bypassing the inaccurate hand scaling found in most other word processors.

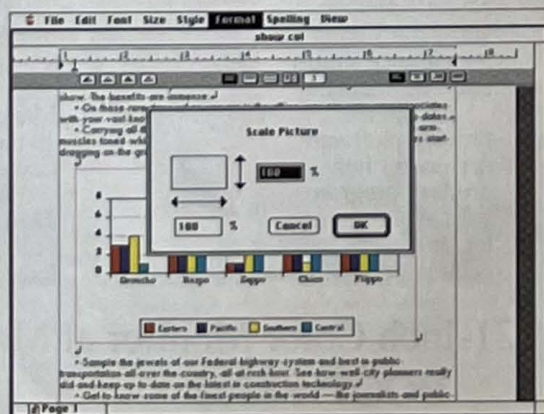
Using MacWrite II. The standard list of features with MacWrite II is impressive, but they would mean little if they or the basic shell of the program were flawed. On both counts, we have to say that Clarix has succeeded. Most of the features are well-integrated, making it easy to concentrate on the work involved rather than the method used to work.

All text, including headers, footers and footnotes, is entered into the document window and can be edited at any time. MacWrite II could be improved to allow for multiple headers and footers within a document.

See MacWrite, Page 40



MacWrite II lets users define custom styles that include some or all of the standard text style attributes, including colors.



Unlike most Mac word processors — and unlike the original MacWrite — MacWrite II lets you set vertical and horizontal scaling for embedded graphics.



The Week in REVIEWS

Ending Installer confusion

Apple's Installer program has been a source of confusion to Mac users ever since it was first introduced in response to complaints about lost disk accessories and fonts and the proliferation of system documents. Although using the Installer is the best way to update your System file and associated utilities, Apple's documentation has not kept pace. In fact, because System 6.0.3 was released before the IIcx, many users have asked us if they should use this disk to boot their shiny new IIcxes. (They should — the Mac II family script works for the Mac II, IIx and IIcx.)

Furthermore, those in multi-Mac environments are confused as to whether their disks will work on other Mac models if they install, say, the SE version of the system.

The answer to all these questions is simply this: If you install the highest-end version of the system (Mac II), it will work with all other Macs down to the Mac Plus. (Earlier versions of the system are recommended for 512KE, 512K and 128K machines.) However, even the Mac Plus Installer script will boot the Mac IIcx — there will just be a lot of features that you won't be able to take advantage of. To fully utilize all features of every Macintosh from the Plus to the IIcx, you need to use the II family script.

For those who don't plan to use their boot disks on more than one model of Macintosh, Apple has provided what it terms "minimum scripts." The minimum script for the Mac II will not include all features necessary for operating the Mac Plus or SE and vice versa. The advantage of using these minimum scripts is that you save disk space. If you have a hard disk, by all means use the full scripts to ensure compatibility.

Templates for SmartForm Designer

FORMula Inc., creator of SmartForms bundled templates, has designed a second series of business forms called FLEXFORM. Volume 1 in the FLEXFORM series, published by Antic Software, includes sets of forms for inventory control, production, sales, delivery, billing and collection, as well as a set of envelopes with business reply and bar-code information. Volume 2 contains internal forms for large companies.

But FLEXFORM functions as more than a set of fill-in-the-blank forms. The forms are so complete and well-integrated that the average small-business owner can learn much about standard business practices from them. The manual states how many copies of each form should be made and who should get them. The forms look clean and contemporary, and space is held at the top for company logos or other artwork.

The manual is excellent and serves as a quick tutorial in using SmartForm Assistant as well as the forms themselves. FLEXFORM volumes retail for \$89.95. Antic is located at 544 Second St., San Francisco, Calif. 94107; (415) 957-0886.

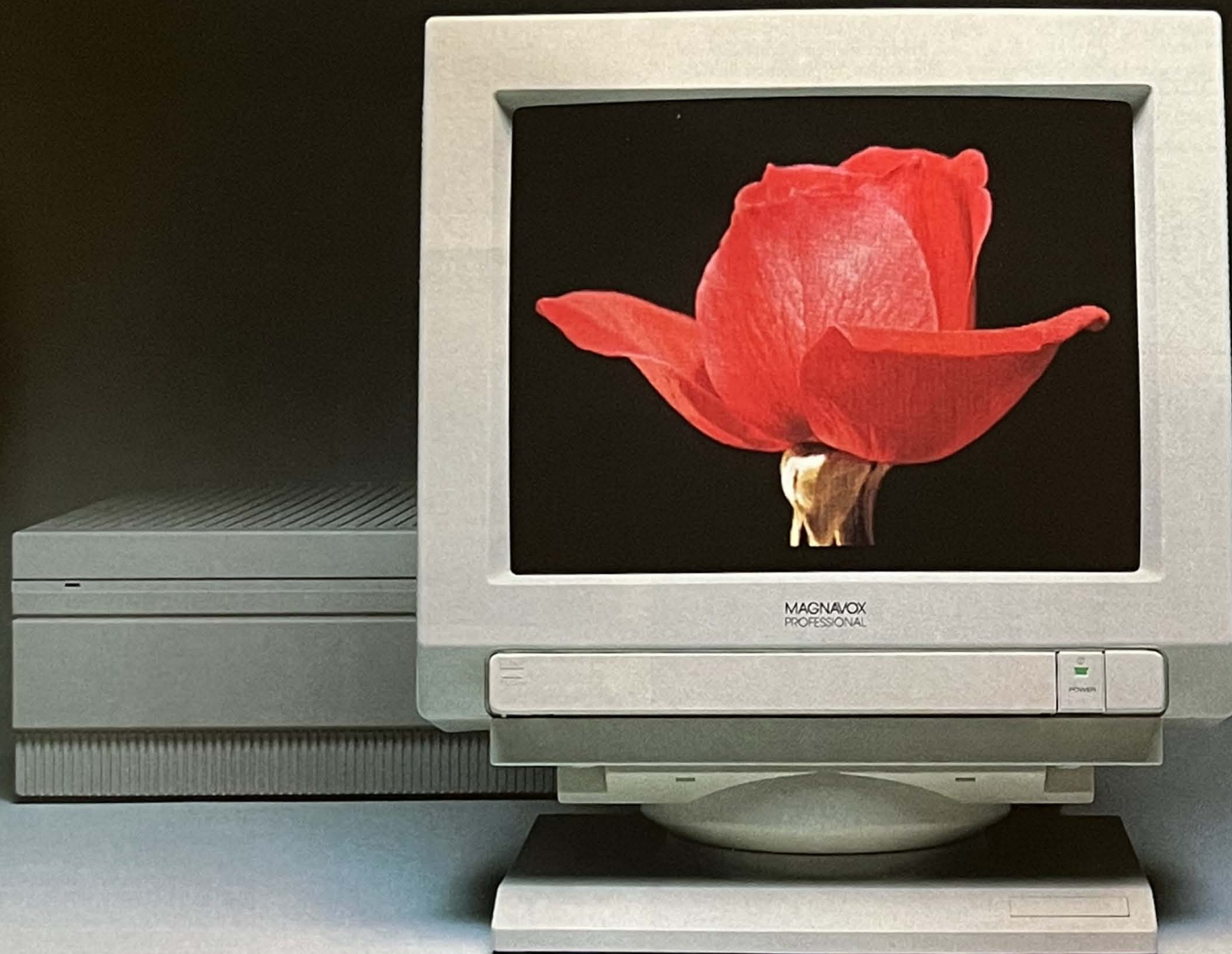
PictureBook 3.0 eliminates copy protection

In response to complaints about copy protection (see Week In Reviews, Feb. 21), Loop Software has eliminated protection from Version 3.0 of PictureBook. We rated this Scrapbook-style DA very highly for its powerful filing capabilities. You can have several books open at once, and it takes a Finder-like approach to naming and moving images around.

Version 3.0 has been enhanced. It now supports Encapsulated PostScript (EPS) images as well as PICT and Paint formats. It also includes a utility for converting a Scrapbook file directly to PictureBook. The package lists for \$69.95. Loop Software can be reached at P.O. Box 1249, Menlo Park, Calif. 94026; (415) 326-4803. — By Becky Waring

Introducing A Better Display For The Macintosh II® ...

For About \$300.00 Less Than You'd Expect.



This is not just another display clone. It's the new Magnavox Analog Color (MAC) display, specifically designed and engineered to compliment the Macintosh II system.

When we decided to develop a display exclusively for the Macintosh II, we started with two objectives: Make it work better, and make it cost less.

Our 14" MAC display appeals to even the most discriminating user. It's equipped with our new proprietary 0.29mm dot pitch

CRT for superb resolution, and a glossy CRT face for crystal clear images. Graphics and text on the MAC display shine at their best. The integrated tilt-base provides the ultimate in user comfort.

Additionally we offer a solid, two-year warranty instead of the usual 90 days. And the \$699 retail makes this a great value.

Designing a superior display for the Macintosh II system was smart. Offering it for \$300 less, that's very smart.

MAGNAVOX

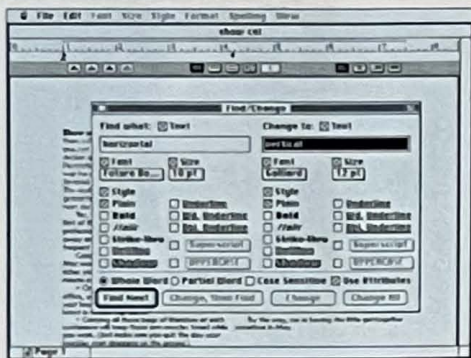
Smart. Very smart.

Apple Macintosh II® is a registered trademark of Apple Computer, Inc.

©1988 Philips Consumer Electronics Company
A Division of North American Philips Corporation

Your only alternatives are a single header for the entire document or different headers for right- and left-hand pages.

MacWrite II does not have flexible style sheets like those in Word, but its custom style format allows users to place up to 30 often-used type styles (Helvetica 12-point italic red, for example) in the Style menu, bypassing the Character dialog box. While



Find/Change works on most type attributes. The **Zoom** box reduces the window to the strip at the bottom.

style sheets are very nice, the custom styles are still a time saver. In fact, the only thing the program's text handling is lacking is the ability to condense or expand type.

Two other capabilities could also be added or improved. One is the ability to wrap text around a graphic object. Text can only be placed on the same line as a graphic. While text wrapping is often associated with page-layout programs, a limited-wrap function (such as around a rectangle) would be welcome.

Another drawback is in the hyphenation system. Hyphenation always applies to the entire document. Hyphenation exceptions must also be entered into a dialog box separately. Ways to hyphenate selections of text as well and perform "batch additions" to the exceptions library would be good features.

The spelling checker, licensed to Claris by Microlytics, is similar to the one in MacWrite 5.0 and is better-designed than many competing integrated checkers. Claris also makes points by including Microlytics' fine WordFinder thesaurus desk accessory in the package (see

See MacWrite, Page 44

PixelPaint makes a comeback with strong new features



RICHARD FOLKERT

SuperMac Software

485 Potrero Ave.
Sunnyvale, Calif. 94086
(408) 245-2202

List price: **\$395**; upgrade free if earlier version purchased between Dec. 15, 1988 and March 15, otherwise upgrade cost is **\$125**

- + Smooth interface; excellent color picking schemes; professional color output options; PixelScan utility included; enhanced dithering techniques.
- Still has only eight-bit color; keyboard- and mouse-handling performance slightly degraded from earlier version.

By Robin Webster

PixelPaint, the first eight-bit color paint program for the Macintosh II, has received the kind of revamp that takes its color graphics out of the "what a pretty picture, too bad you can't do much with it" category and into the rough-and-tumble world of professional color printing.

With the original PixelPaint, expensive and even exotic methods were required to turn on-screen color images into some form of equivalent hard copy. SuperMac's PixelPaint 2.0, on the other hand, provides the essential tools that professional graphic artists need by supporting the Pantone color system and by producing color separations and spot color output. In addition, there are enhanced image dithering effects and a new utility called PixelScan, which does a really efficient job of converting color or gray-scale scans into PixelPaint format.

Those expecting PixelPaint 2.0 to look totally different are going to be disappointed. The new version is still eight-bit, has the same tool palettes and has virtually the same menus. Rather than give it a total make over, SuperMac decided instead to refine PixelPaint's personality by incorporating features that had originally been planned for its 24-bit color paint program (no longer to be called PixelPaint Professional) currently under development.

New features.
So what exactly does

the 762-Kbyte PixelPaint 2.0 give you that the much slimmer original version does not?

Tool performance changes are most evident when the so-called Special Effects mode is brought into play. Generally, tools used under Special Effects have a greater range than their predecessors. They also behave somewhat differently.

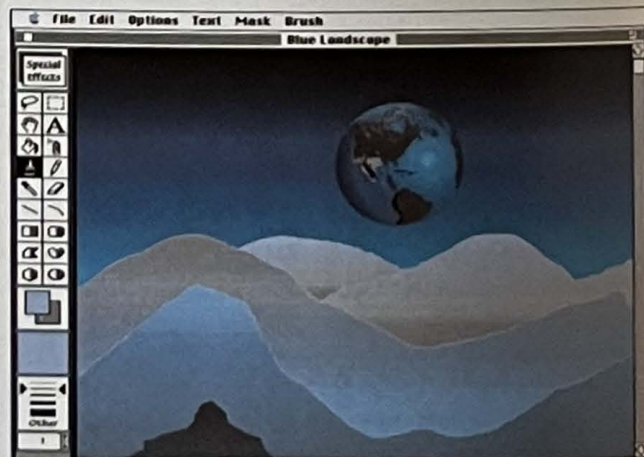
With the Brush tool selected in Special Effects mode, for example, you can use whatever is on the Clipboard as a brush pattern. This is similar to the anything-can-be-a-brush feature found in Electronic Arts' Studio/8 paint program. Also, the Smooth and Smear brush options are much more gentle and practical since they don't blast color pixels in all directions. Now, because of the special dithering technique employed by PixelPaint 2.0, they render a much smoother, more realistic blending of colors.

The new dithering approach has helped in another area as well. Early eight-bit color paint programs, including PixelPaint, suffered from a problem called "banding" when a fill of different colors or progressive shades was used. Rather than smoothly progressing from one color to another, the fill appeared to be made up of quite distinct bands or stripes of color. This problem has been greatly reduced with PixelPaint 2.0.

In addition to the previous range of fill options there is a group of dialog box options that control the linear fill speed, so that fills can be made to look as if they are accelerating or decelerating in a particular direction. A combination of these two fill methods adds some visual depth to filled objects.

The only new menu that immediately stands out is the Mask menu since it is available regardless of whether normal or special effects tools are in use. The Mask menu commands allow you to selectively "mask off," or protect, parts of an image from painting and other editing, just as traditional artists use protective friskets on their work. It's good to see that this feature was included, since rival products Studio/8 and LaserPaint Color II from LaserWare tout this ability.

Six color pickers. Like Studio/8 and LaserPaint Color II, the new PixelPaint supports palettes that display 256 selectable colors for each document. However, these products employ different philosophies when it comes time to create or edit a palette.



This blue landscape shows PixelPaint 2.0's smooth dithering and pattern fill capabilities. Note that the tool palette is in Special Effects mode.

**NEW
SUPEREAST
VERSION 2.0
NOW SHIPPING!**

**WHY TYPE IT,
WHEN ANY SCANNER
CAN READ IT.**

READ-IT! O.C.R.

- Works with *any* scanner.
- Fast, accurate and easy to use.
- Affordable and proven technology - over 20,000 sold.
- Minimum hardware required - Mac Plus.
- Pre-trained for popular typefaces.
- "EasyLearn™" training for new typefaces.
- Recognizes foreign languages.
- Reads columns and typeset material.

READ-IT! Personal
for the ThunderScan™
digitizer, Scanman™,
LightningScan™,
other hand-held
scanners and PC
systems also available
for details.

"READ-IT! O.C.R.
can dramatically
increase your productivity...
the sensible choice for O.C.R. on the Mac."
MacUser

Stop typing! Now with READ-IT! O.C.R. software and *any* scanner, including the new AppleScanner,[™] you can turn virtually any printed material, including Fax Modem documents, contracts, newspapers, price lists, phone books etc., into usable text files for your word processing, database, spreadsheet or desktop publishing application.

So call toll-free 1-800-822-0772 for the only O.C.R. that really makes sense. **READ-IT! O.C.R.**

OLDUVAI Corporation 7520 Red Road, Suite A, South Miami, FL 33143 • (305) 665-4665 • FAX (305) 665-0671

With PixelPaint 2.0, you can choose from among six color pickers (color selection techniques): the default Apple color picker, the Pantone Matching System (PMS) color picker, the RGB (red, green, blue) color picker, the HSV (hue, saturation, value) color picker, the Process Color (cyan, magenta, yellow, black) color picker and the Color Theory color picker.

Clearly a lot of careful thinking went into the design of the PMS color picker. Instead of displaying only a single color at a time like LaserPaint Color II does, PixelPaint's PMS color picker presents seven entire pages of the Pantone Color Formula Guide on-screen at once. You can select specific colors by clicking on any one of those shown in the page display area or by typing the Pantone number if you already know it. Additionally, all 747 Pantone colors can be rapidly browsed by dragging the mouse pointer over a color "ramp" along the bottom edge of the PMS color picker dialog box.

If you've been trained in color theory, you can transfer that fairly sophisticated knowledge to the Macintosh II graphics environment by using the Color Theory picker. Once you've selected a palette color to edit, the Color Theory picker displays a set of associated colors from which you can select: analogous colors, complementary colors, direct complementary color, split complementary, triadic, tints and shades.

Both the PMS and Color Theory color pickers are intuitively designed and simplify the task of choosing just the right color.

Color printing. Previously, when printing documents with PixelPaint all you would see was the standard LaserWriter dialog box. No special color or halftone print methods were directly supported. This situation has been rectified with Version 2.0, since it supports both QuickDraw- and PostScript-compatible output devices.

Now when you click OK in the print dialog, a special PostScript Printing Control dialog appears with options for gray-scale, color image, spot color and color separation printing methods. If you're printing gray scales (halftones), you can use the PixelPaint defaults or experiment with different print screen textures, angles and resolution. For spot color prints, there's a special Pantone picker from which you select the spot color to be used in printing an image.

When it comes to handling color separations, PixelPaint 2.0 has been equipped with a full range of controls. In addition to the basic ability to choose which and what percentage of the four colors should be separated out from an image and printed, there's the rather vaguely named Other Separation Controls dialog that allows for fine-tuning. Undercolor Removal is used to enhance image detail by using a higher percentage of black. Maximum Ink Buildup is used to control the lightness or darkness of the separations. Density Range is used to control the density of each separation.

All the printing controls are easy to understand and easy to use, so long as you are familiar with the requirements of the four-color printing process.

File exchange. In terms of importing images, PixelPaint 2.0 can import as well as export PICT, PICT2, tag image file format (TIFF), MacPaint and Encapsulated PostScript (EPS) formats. Note that since PixelPaint 2.0 is a paint program, EPS and vector graphic objects are converted into bit-mapped equivalents that can then be edited on a pixel-by-pixel basis.

PixelScan 2.0 is a powerful utility used for scanning in color or gray-scale images using

the 24-bit Sharp JX-450 or Howtek Scanmaster color scanners. In our tests, the resulting eight-bit color scans were of very good quality, and PixelScan 2.0 automatically created a "best-match" color palette that beautifully mimicked the true image colors.

Performance. PixelPaint 2.0 compares well with the earlier version in terms of performance, with a couple of small exceptions.

If you select a fairly large area of an image with the Lasso tool in the original PixelPaint, you can quickly pick up and drag the selec-

tion to a new location. With PixelPaint 2.0, however, it seems that the pixels are a bit "heavier." If you click and drag on the selection too quickly, it doesn't move at all. You have to move much more slowly if the drag is to work. Selections made with the Marquee tool work fine.

We also found that using keyboard commands for menu items didn't always work the first time. Often, the Command key combination had to be held down for much longer than normal before it took effect. This could be a little disconcerting when

using the Undo command; if you hold the keys down too long, you end up undoing the undo.

Conclusions. Overall, the \$395 PixelPaint 2.0 is an upgrade that's been well worth waiting for. In terms of its user interface and fluidity of use, it outclasses the more powerful, but far less elegant, LaserPaint Color II (\$595). With its nicely implemented support for color printing, it beats out Studio/8 in terms of being a self-contained, professional graphics tool. □

See
MAC.



See
DOS.



See MAC
Make
DOS Run.



pcMACTERM/Network Lets You Run Any PC From Any Mac On Your AppleTalk Network

DMA, the industry leader in communications software, is proud to introduce pcMACTERM/Network™—the remote computing software product designed to give the power of DOS to all the Macs™ on your AppleTalk™ Network. With pcMACTERM/Network, Mac users, one at a time, can share a PC host, accessing and running the PC's applications remotely from the Mac keyboard and screen. Control of the PC extends to all its peripheral attachments, including network cards and gateways to minis and mainframes.

MacUser says, "After you're connected, the PC screen appears in the pcMACTERM window on the Macintosh. Once you get

over the shock of seeing an MS-DOS window on your Mac, pcMACTERM...does what it's supposed to do without fuss or bother."

pcMACTERM/Network works with MultiFinder™, so you can run a DOS application in one window while running Mac programs in other windows. And pcMACTERM/Network allows you to use Mac functions like "cut" and "paste" in the PC window. You can even cut and paste between DOS and Mac applications.

Like all DMA programs, pcMACTERM/Network is easy to install and use. Now your Mac users can share the thousands of DOS programs, including those already in use in your organiza-

tion, for the smallest investment possible. pcMACTERM/Network even works across AppleTalk zones and bridges.

Now all that power can be shared over an AppleTalk Network for the unusually low price of only \$395 per PC host. Each copy of pcMACTERM/Network is licensed for one PC on the network and for as many Macs as are connected to that same network.

To order, call your local dealer or distributor. For more information, contact:

Dynamic Microprocessor
Associates, Inc.
60 East 42nd Street
Suite 1100
New York, New York 10165
Phone: (212) 687-7115



Macintosh, Mac, MultiFinder and AppleTalk are trademarks of Apple Computer, Inc.

pcMACTERM/Network. One easy step brings DOS to your entire AppleTalk Network.

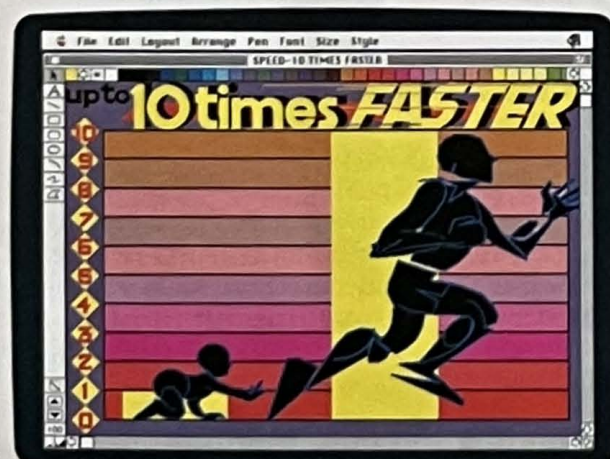
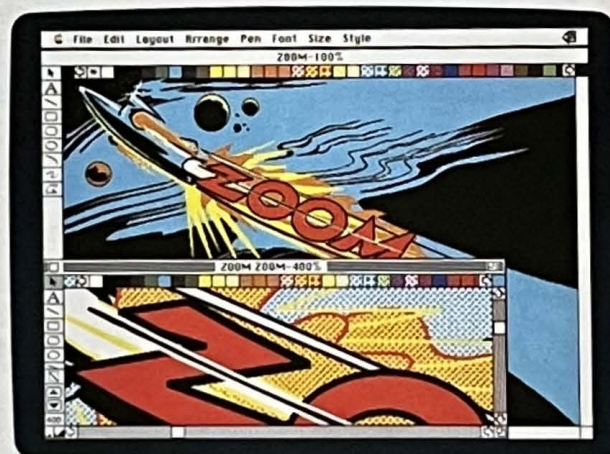
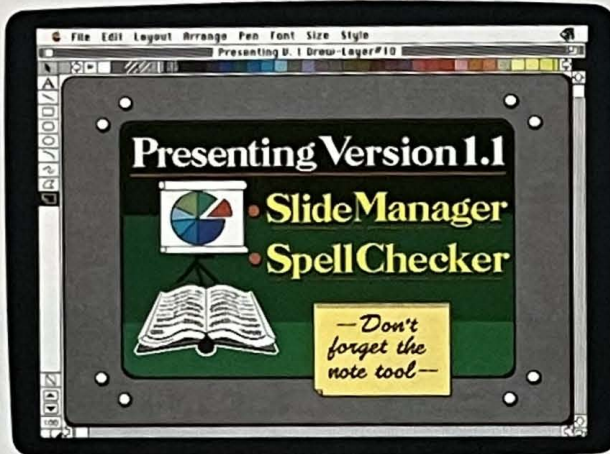
pcMACTERM vs. MacChuck: PC-to-Mac support

By Dale Coleman

Controlling an IBM PC or compatible via a Macintosh window might at first seem to be merely an interesting endeavor of limited utility. But on reflection, a variety of useful tasks are possible, with many actually requiring such a configuration (see "PC-Mac remote networking," Page 44).

Early attempts at remote Mac control of a PC required either a relatively slow modem connection or a sometimes-cumbersome direct cable hookup. And for those situations where multiple Mac users need regular but infrequent control of an office PC, modem or cable solutions are often too burdensome.

Dynamic Microprocessor Associates' (DMA) pcMACTERM/Network and Vano Associates' MacChuck Version 1.5 are new releases that address these issues admirably by supporting a network connection between Macs and AppleTalk-equipped PCs. In the process of adding AppleTalk network support, both programs have addressed some



Nobody reads legal type, either. But try convincing our lawyers of that. © 1989 Claris Corporation. All rights reserved. 440 Clyde Avenue, Mountain View, CA 94043; 415-962-8946. Claris is a trademark and MacDraw is a registered trademark of Claris Corporation. For the location of the nearest Claris dealer call 800-3-CLARIS, ext. 260. In Canada, call 800-668-8948.

Nobody reads copy anyway. MacDraw® II.

pcMACTERM/Network

Dynamic Microprocessor Associates Inc. (DMA)
60 E. 42nd St.
New York, N.Y. 10165
(212) 687-7115

List price: \$395

+ Intelligent keyboard mapping; host operator notification; remote PC terminal software included.

- No file translation facilities; slow file transfers; incompatible with non-network version; poorly organized documentation.

MacChuck Version 1.5

Vano Associates Inc.
P.O. Box 12730
New Brighton, Minn. 55112
(612) 788-9547

List price: \$95

+ Relatively fast file transfers; MacBinary support and line feed conversion; direct cable support (cable included).

- No host operator notification or password protection.

deficiencies of previous versions, including support for CGA graphics (see review of MacChuck, April 26, 1988).

Both programs include host software for the PC and terminal emulation software for the Mac. In addition, DMA includes ATERM terminal emulation software so that remote PCs may also access the host PC. Vano Associates includes the option of a direct cable connection between the Mac and PC, along with a cable with a Mac eight-pin connector on one end and a standard AT nine-pin connector on the other. Vano also provides a nine- to 25-pin cable adapter for those using pre-AT-class machines.

Neither product supports remote modem operation, although DMA sells a non-network version of its product that supports both direct serial port cable connection and modem connection. Unfortunately, the serial version of the DMA PC host software is incompatible with the network version, although you may simultaneously run MacChuck 1.5 and the serial version of pcANYWHERE (the host PC software) on the same machine.

Although the two products perform essentially the same task and in operation are remarkably similar, the differences between the two reflect contrasting overall objectives.

pcANYWHERE originated as a PC-to-PC remote control application, with pcMACTERM, offering Mac-to-PC support, first offered last May. The network version reflects those origins in several ways, including log-on password protection and host operator notification. The pcANYWHERE host PC operates in one of three modes: dedicated to waiting for a remote log-in, resident in memory so as not to interfere with normal host PC console operation, or an automatic mode that the host PC console user must manually activate to allow remote log-in. A Chat mode for keyboard conversations between the remote and host users is also provided.

MacChuck, on the other hand, has never supported modem operation and therefore has no log-on password protection mechanism or provision for logging remote usage. Users at the host PC receive

CLARIS

no notification that a remote user has logged on, and there is no Chat mode.

File transfer. File transfer performance varied significantly between the two products, both of which support background transfers under MultiFinder. Transferring a 766-Kbyte file over a single-PC, single-Mac network took MacChuck approximately a minute and 30 seconds, while pcMACTERM/Network took approximately three minutes and 45 seconds to accomplish the same task. (On extremely busy networks the transfer time for both products may be longer.) On the same hardware using TOPS 2.0, the transfer took approximately 50 seconds.

MacChuck provides limited file translation utilities, although it does recognize MacBinary information. When transferring a file to the Mac, you have the option of setting the file creator (six pre-defined creators, including MacWrite, Microsoft Word 3.0 and Microsoft Works, are provided) and removing line feeds.

As another indication of pcMACTERM/Network's PC heritage, it has no provision for data translation of files transferred between the two machines. As a result, you will have to use one of the available Mac file utilities to set the Type and Creator of each file transferred to the Mac.

Keyboard support. The plethora of keyboard configurations available in the Mac and IBM worlds is an important consideration for this type of application. Both programs support the Mac's extended keyboard, including FKeys 1 through 10, the numeric key pad and the directional keys, a welcome improvement over earlier non-network versions. Both programs also provide support for standard Apple keyboards and non-Apple Desktop Bus keyboards via on-screen buttons for FKeys. pcMACTERM/Network also provides on-screen buttons for arrow keys plus Command-number key combinations for emulating FKeys 1 through 10.

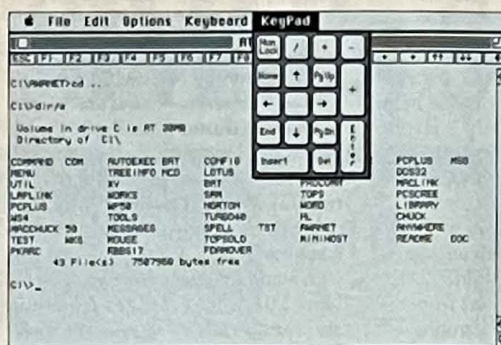
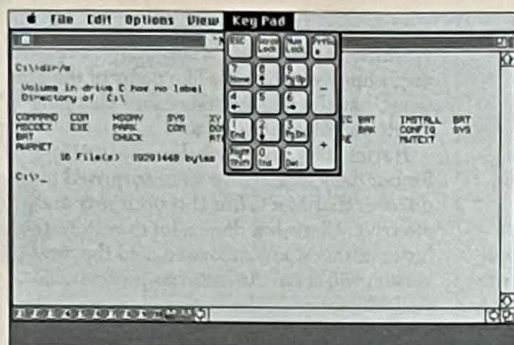
While MacChuck supports only the original IBM PC keyboard's numeric/directional key pad via its Key Pad menu, pcMACTERM/Network excels in supporting post-IBM PC keyboards. pcMACTERM/Network automatically detects whether the host keyboard is an original IBM PC-style keyboard or one of the extended keyboards used on later model ATs and all PS/2s, then accordingly adjusts the Key Pad menu. In addition, pcMACTERM/Network provides a Keyboard menu for access to the Tilde, F11, F12, Sys Req., PrtSc, Pause, Break and Right Shift keys. (Unlike the Mac, PC keyboards generate different codes for the right and left Shift keys.)

Documentation. DMA includes documentation for the serial port versions of pcMACTERM and pcANYWHERE III. Information specific to the pcMACTERM/Network package is included in an 11-page addendum. While everything you need is there, you'll have to wade through much irrelevant serial port and modem information. A \$395 product deserves dedicated documentation.

The 82-page MacChuck documentation is skillfully integrated and well-indexed, covering both direct serial connection and network operation in a logical, easy-to-follow manner. In addition, it includes detailed technical information, a section on common MacChuck problems and a review of basic DOS operations.

Conclusions. While both products easily accomplish the goal of remote PC control on the Mac, each offers useful features not

See Remote, next page



MacChuck's Key Pad menu (far left) approximates the numeric key pad of the original IBM PC. The pcMACTERM/Network Keyboard menu automatically senses whether the host machine has an original IBM PC-style keyboard or the later IBM AT-style keyboard (near left) and accordingly adjusts the menu.

Put your Mac[®] SE into orbit

MacSElerator[™] doubles the speed - doubles the power!

The new MacSElerator[™] accelerator board from Newer[™] Technology gives your Macintosh[®] SE the speed and power of a Mac II at a fraction of the cost. You get a full 16 MHz of power for double the productivity with half the frustration!

MacSElerator features a 16 MHz, 68000-based microprocessor that doubles the operating speed of your SE. The standard, small size SE expansion card installs quickly and easily into the option card slot. There are no chips to remove, no cables to connect. An optional 16 MHz 68881 "plug-in" math coprocessor, available from Newer Technology, lets you tackle technical applications, too! MacSElerator features a port of the Apple[®] SANE (Standard Apple Numeric Environment), developed for the 68020, and revised to work in a 68000 environment to deliver unmatched computational

accuracy and speed. The New SANE is 2 to 4 times faster than the resident SANE in the Mac SE ROM. For operator flexibility, the board is speed switchable from the control panel, allowing normal 8 MHz operation for speed sensitive applications. MacSElerator is completely compatible with all your current software and hardware. You can access all memory from the motherboard. Plus, the built-in static RAM cache caches ROM and SE RAM, including video memory at "0" Wait States. A connector for a large screen monitor is also provided.

The 16 MHz MacSElerator board is delivered to you with complete, easy to understand installation software and documentation. It's available for immediate delivery.

Designers and manufacturers of The Newest Technology in Memory for Macintosh[®], Compaq[®], IBM[®] and compatibles.

Call Our Memory Hotline For Prices and Discounts
1-800-678-DRAM (678-3726)

4MB
- High Profile
16 - 32MB For Mac Ix
Perfect For A/UX

1MB - High Profile
Low Profile
2 - 8MB For Mac Plus,
SE, II, Ix and IIfx

256K
- Low Profile
1 - 2MB
For Mac Plus,
SE, II, Ix and IIfx

Memory Expansion SIMMs From Newer Technology

We stock 256K, 1MB and 4MB Memory Expansion SIMMs for the Macintosh Plus, SE, SE/30, II, IIfx, and offer Guaranteed Same Day Shipment!

Newer[™] Technology, Inc.
1117 S. Rock Rd., Suite 4
Wichita, KS 67207
Phone (316) 685-4904
FAX (316) 685-9368

In Canada Contact:
Tallgrass Technologies, Canada, Inc.
• 1775 Meyerside Drive #1
Mississauga, Ontario L5T 1E2
• (416) 673-3244
FAX (416) 673-3926

Newer[™]
TECHNOLOGY

MacWrite

Continued from Page 40

MacWEEK Nov. 10, 1987).

MacWrite II has an extensive on-line help system based upon Symmetry Corp.'s Hyper-Engine that provides a better-than-average degree of help. The manuals are also good for the level of the program.

In general, MacWrite II is a very well-designed and robust program with an excellent interface. We did have odd instances of cutting and pasting text from one document to another where margins

were not preserved, but that was the only anomaly we found, and it generally occurred at the beginning of a document.

Conclusions. MacWrite II's debut comes not long after the release of WriteNow 2.0, and one can easily compare the two. Like WriteNow, MacWrite II looks deceptively simple. Both programs offer a wide range of features that appeal to people with standard word processing needs. WriteNow 2.0 has fewer features, but it is cheaper and runs on all Macs, even the lowliest 128K.

MacWrite II has additional features, most of which are welcome, if not totally necessary, improvements. We like many of the new items, like the custom styles, font changing ability and elegant interface.

Having long since abandoned MacWrite for our daily writing, we were surprised to discover that MacWrite II is both sexy and effective. Claris has done a lot to restore the luster of the MacWrite name, and the new version will serve the business professional well while stirring the waters of competition for some time. □

Remote

Continued from Page 43

found in the other, pcMACTERM/Network's host operation options, excellent support of various PC keyboard configurations and support for both remote Macs and remote PCs make it the product of choice for many mixed Mac and PC networks. We are distressed, however, at its relatively slow file transfer speeds and the lack of file conversion utilities, especially its lack of MacBinary format support.

MacChuck's keyboard support may present some inconveniences for users of later AT-class and PS/2 machines, and its lack of host control options may pose problems in some network environments. On the other hand, its support for MacBinary format and skill at transferring text files between the two environments are extremely attractive, while its ability to operate either over AppleTalk or by direct serial cable connection provides added flexibility. At one-fourth the cost of pcMACTERM/Network, MacChuck 1.5 represents a real value. □

LabVIEW Instrumentation Software.

Our Users Tell the Story.

EDUCATION

University of Southwestern
Louisiana

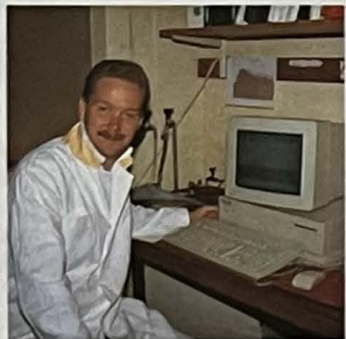
"LabVIEW is the best single software entity that has been written to date for any computer for any purpose." Dr. John O'Dell, professor of Mechanical Engineering, uses LabVIEW in his course on computer-controlled systems.



MEDICINE

Sahlgren University Hospital—Sweden

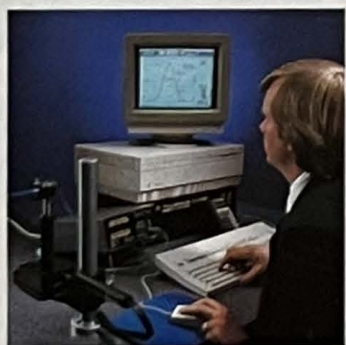
"Without any earlier experience with programming, we were writing our own applications after the LabVIEW 3-day training course." Dr. Anders Ullman uses LabVIEW in clinical pharmacology. Muscle contractions evoked by nerve stimulation or by different drugs are measured via isometric force transducers with a plug-in analog input board. Each channel is monitored on a LabVIEW strip chart.



OPTICS

Newport Corporation

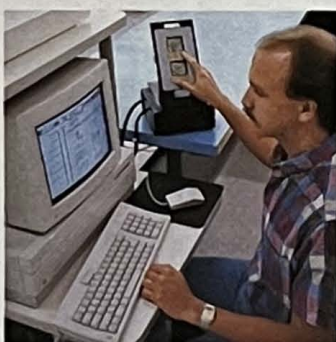
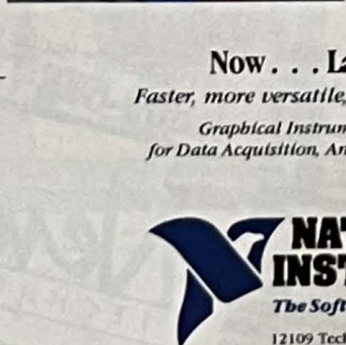
"LabVIEW makes it easy for researchers to create sophisticated optical experiments that anyone can operate." Scott Jordan incorporates LabVIEW with instruments from Newport in applications like this Gaussian laser beam profiler.



SEMICONDUCTOR RESEARCH

Raytheon Company

"LabVIEW is the system of choice for data acquisition." John Day uses LabVIEW and GPIB instruments to measure physical properties of GaAs semiconductors. LabVIEW generates graphs of capacitance versus frequency and capacitance versus voltage.



AUTOMATED TESTING

Sundstrand-Sauer

"With LabVIEW, I have reduced testing time for our control panels from 15 minutes to less than 1 minute." Jay Herman is in charge of testing Sundstrand control panels used on concrete paving machines. A GPIB-controlled power supply tests the power requirements for these machines. Analog and digital lines on the control panel are tested with the NB-MIO-16 board.



PHYSICS

The University of Texas
at Austin

"We initially set up our system on a MicroVAX. It took 6 months. With LabVIEW and a Macintosh II, we got it working in a couple of weeks." Azucena Overman, graduate student in the Physics Department, researches the chemical properties of surfaces. In her research, LabVIEW controls GPIB instruments and graphs the data collected.



CIVIL ENGINEERING

Stanford University

"LabVIEW is the most flexible data acquisition software I've ever seen—it's also a bit of fun." Dr. Steven Monismith of the Civil Engineering Department uses an experimental pond to research double diffusive systems. LabVIEW and an NB-MIO-16 board measure signals from temperature and conductivity probes in the pond, and control a motor that varies the depth of the probes.

SIMULATION

Engineering Measurements Company

"LabVIEW saved me several months of development." John Waters simulates digital signal processing algorithms with LabVIEW. The algorithms are burned into EPROMs on intelligent flow meters manufactured by Engineering Measurements Company.

Now . . . LabVIEW® 2.0

Faster, more versatile, and even easier to use.

Graphical Instrumentation Software
for Data Acquisition, Analysis, and Presentation.12109 Technology Blvd. Austin, Texas 78727-6204
512/250-9119 800/531-4742 800/IEEE-488 in Texas

"See us at MacWorld Expo Booth #300"

PC-Mac remote networking

Although Mac users almost always prefer Macintosh applications over similar IBM PC applications, there are a variety of tasks that are either more convenient or available only on the PC. In the course of putting MacChuck and pcMACTERM/Network through their paces, we discovered a number of intriguing possible uses, all of which require only a very small MultiFinder partition on the remote Mac.

► **PC CD-ROM access.** There are a variety of useful CD-ROM-based reference works that are only available in PC format. With both products we can access Microsoft Bookshelf and Ziff-Davis' Computer Library (containing the complete texts of many computer industry publications).

► **Applications only available in PC format.** We use General Information Inc.'s Hotline, a handy DOS terminate and stay-ready application, to access the electronic version of the National Directory of more than 10,000 listings for corporations and government agencies. General Information can be reached at (206) 828-4777.

► **Favored DOS applications.** A complex DOS telecommunications macro, for example, can run unattended on the PC until needed. In this example, the PC can function as an extremely flexible and convenient Mac peripheral.

► **Mainframe access.** Although we did not test this configuration, DMA states that a PC equipped with an IRMA card will allow remote pcMACTERM/Network-equipped Macs access to connected IBM mainframes.

► **RBBS (remote electronic bulletin board system) maintenance.** Since the PC's serial ports are not used, the network version of either product is very handy for maintaining a dedicated PC bulletin board. By definition the machine is usually not used for any other purposes, so it can quite conveniently be stashed away in a corner and maintained directly from the Mac. Because it's MacBinary aware, MacChuck 1.5 is especially useful for maintaining bulletin boards that have lots of Mac files. — By Dale Coleman

MO.

MAIL ORDER SECTION
FOR VOLUME BUYERS

45



Keep your MacWEEK issues within reach. Store them in these handsome, durable red vinyl binders. Each custom binder has a clear outside pocket for volume/date information and holds up to 20 issues. Now only \$15.00 per binder, including postage and handling. * Offer good only while supplies last.

*Canada add \$5.00.

MacWEEK 301 Howard St., Dept. MO, San Francisco, CA 94105-9742

Please send me MacWEEK binders at \$15.00 each. Check or money order enclosed for \$_____. Postage and handling included. Allow 4-6 weeks for delivery. Canada, add \$5.00.

Charge my: ☐ AmEx ☐ Visa ☐ MC

Card # _____ Exp. Date _____

Name _____

Company _____

Address _____

City _____ State _____ Zip _____



Offer limited to Canadian and U.S. addresses only.

Sacrificial RAM. SIMM's \$169.



IN STOCK

MacProducts USA has been delivering SIMM's continuously since 1987. Fortune 1000 companies and major universities, including Motorola, Apple™, DuPont, NASA, MIT and Yale University, rely on us for high quality, inexpensive memory. Manufactured in Austin, Texas, our SIMM's are now backed with a lifetime manufacturer's warranty. And now, our direct pricing guarantees you of one more feature.

The lowest regularly available price on the market.

Volume inquiries welcome.

MacProducts USA

8303 MOPAC EXPRESSWAY, SUITE 218 • AUSTIN, TEXAS 78759 • 1 (800) 622-3475

1 (800) MAC-DISK

A SIMM IS A TERRIBLE THING TO WASTE!

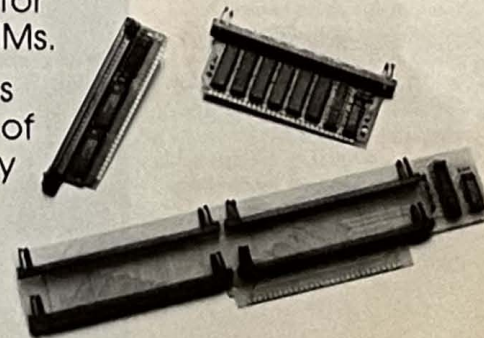
Computer Care Inc. has introduced a new line of cost effective memory upgrades for Macintosh computers. **SOFTSTEP** offers a low cost alternative for upgrading computers by using standard 256K SIMMs.

SOFTSTEP I & II are socketed SIMMs with onboard memory that accept the factory installed 256K SIMMs to increase the machines memory.

SOFTSTEP III, IV & V are SIMM modules that allow you to build 512K & 1 Meg SIMMs for the Macintosh using 256K SIMMs.

No machine modifications are required when using any of our products. 1 year warranty on all parts. Made in USA.
Call for free information.

**Computer
Care,
Inc.**
5124 Russell Ave S
Minneapolis, MN 55410
FAX: (612) 925-2720



ORDERS & INFO

1-800-950-CARE

In MN (612) 920-CARE (2273)

Dealer inquiries welcome.

IEEE 488 (GPIB/HP-IB) interfaces



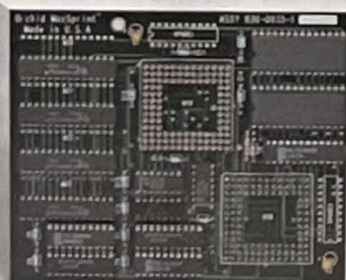
IOtech offers the most complete selection of IEEE interfaces for the Macintosh. Select from the Mac II488 NuBus board for the Mac II, MacS 2SI488 SCSI/IEEE controller for the Mac Plus, SE and II, and Mac488B serial/IEEE controller for all Macs. Included with all interfaces is MacDA488 desk accessory for IEEE control from all applications, and MacDriver488 for Hewlett-Packard style programming for BASIC, C, Pascal, HyperCard and more. For IEEE plotter interfacing, Mac-Serial488 works with all Macs.

Call or send for your free IEEE Technical Guide.

IOtech, Inc.
25971 Cannon Rd.
Cleveland, Ohio 44146
Telephone: (216) 439-4091
Fax: (216) 439-4093
Telex: 6502820864

The Mac II maximizer – MacSprint

MacSprint II is the \$299 cache card for your Macintosh II that accelerates system performance by an average of 22 percent to a maximum of 30 percent. It takes less than five minutes to install and doesn't require a NuBus slot. MacSprint II eliminates the Mac II's wait-states by providing 32-Kbytes of cache memory. Examples of resulting speed increases:



- 30 percent faster in MacDraw II
- 25 percent faster in Excel
- 28 percent faster in FileMaker
- 25 percent faster in FreeHand

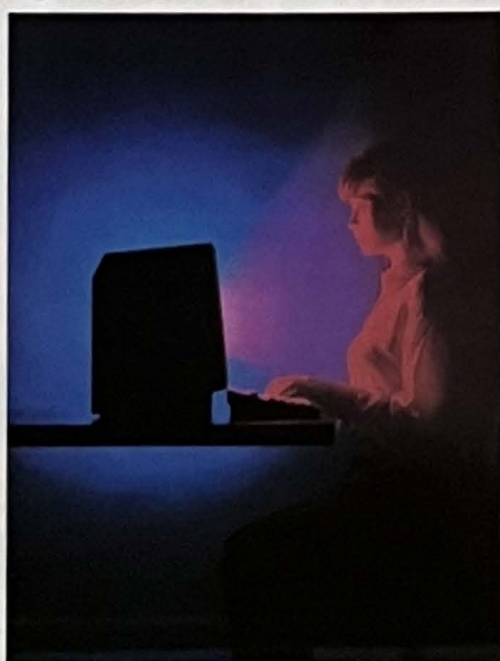
Orchid Technology
45365 Northport Loop W.
Fremont, Calif. 94538
(415) 683-0373

Reduce electromagnetic radiation

Evidence mounts which shows a connection between non-ionizing radiation and skin irritation, eye damage, and an increase in miscarriages.

Now you don't have to meekly accept the risks. NoRad Corporation has introduced the NoRad Shield which virtually eliminates the through-screen non-ionizing electromagnetic radiation while disposing of glare, reflections, and the static electric field.

To order, call and ask for our free booklet entitled *How to reduce the stress, strain, and hazards from your computer*. \$129 to \$139.



NoRad Corp.
1549 11th St.
Suite 205
Santa Monica, Calif. 90401
(800) 262-3260 ext. 200
(213) 395-0800

Generic Brain – Just add intelligence



HyperX is the HyperCard expert system. Clone yourself by teaching HyperX how to troubleshoot problems or provide advice when you're not around. Access a knowledge base of expertise anywhere you have a Macintosh.

HyperX provides an excellent introduction to expert systems for the novice. It also includes powerful advanced features for developing and delivering complete multimedia expert systems.

Here are a few examples of applications:

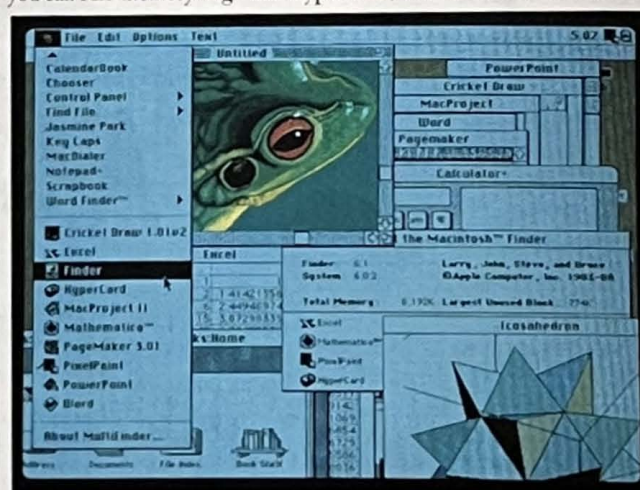
- Intelligent database interfaces
- Data analysis
- Computer Assisted Instruction
- Troubleshooting
- Automation of complex procedures
- Decision support systems

The perfect way to add intelligence to new or existing stacks. Ask your software dealer today about HyperX, the price/performance leader in expert system development tools. \$99.95

Millennium Software 1970 S. Coast Hwy. Laguna Beach, Calif. 92651 (714) 497-7439

What's wrong with this picture?

This is a 2-Mbyte Macintosh — running 7.5 Mbytes of applications! It's made possible with VIRTUAL, the virtual memory program that puts information normally stored in RAM on your hard disk instead — and saves you money. VIRTUAL retrieves information transparently as needed, so you can run 'memory hogs' like HyperCard, PixelPaint and Mathematica concurrently under



MultiFinder, giving your Mac workstation-like capabilities. Now available! Software for the Macintosh IIx, IIfx and SE-30, \$295; software and hardware for Mac II \$695.

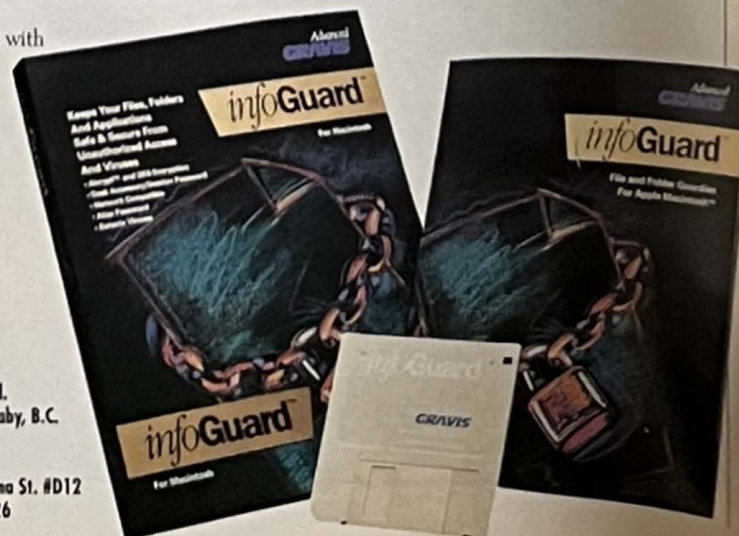
Connectix Corp.
125 Constitution Dr.
Menlo Park, Calif. 94025
(415) 324-0727

24 - hour protection!

Don't worry! Be secure! With InfoGuard from Advanced Gravis, you can rest easy, knowing your files, folders and applications are safely guarded from prying eyes and data-destroying viruses.

InfoGuard 2.0 provides the most complete protection, fastest operation, and the best features of any security software. It can perform its functions conveniently in the background under MultiFinder. And all for only \$99.95.

Also available now is InfoGuard Multi-User, the first multi-user encryption product with full administrator capabilities. Dealer inquiries welcome!



Advanced Gravis
Computer Technology Ltd.
7033 Antrim Ave., Burnaby, B.C.
Canada V5J 4M5
(604) 434-7274
U.S. Office: 1602 Carolina St. #D12
Bellingham, Wash. 98226

Get a FREE Subscription to MacWEEK

Applicants who qualify will receive a complimentary subscription to MacWEEK. All questions must be answered, including those which request specific numbers, to be eligible for qualification. Incomplete forms cannot be processed. The publisher reserves the right to limit the number of free subscriptions. Remember: sign and date this form before returning.

• Please start/continue my FREE subscription to MacWEEK.

☐ 01. Yes ☐ 02. No

9B16

1 Your company's primary business activity AT THIS (check one only):

Non-Computer Related

- ☐ 01. Aerospace
- ☐ 02. Architecture, Engineering
- ☐ 03. Research and Development
- ☐ 04. Graphic Arts
- ☐ 05. Communications: Publishing, Advertising, Public Relations, Promotion
- ☐ 06. Government: Federal
- ☐ 07. Government: Non-Federal
- ☐ 08. Manufacturing
- ☐ 09. Education
- ☐ 10. Finance: Banking, Accounting, Insurance, Real Estate
- ☐ 11. Health, Medical, Legal

- ☐ 12. Retail, Wholesale, Distribution
- ☐ 13. Agriculture, Mining, Construction, Oil, Transportation, Utilities

Computer Related

- ☐ 20. VAR/VAD
- ☐ 21. Retailer/Distributor
- ☐ 22. Systems House/Data Processing Service
- ☐ 23. Manufacturer (Computers, Software, Peripherals)
- ☐ 24. Computer Consultant
- ☐ 99. Other Businesses & Services (please specify)

2 Your Professional Title (check one only):

- ☐ A. Chairman/President/Owner/Partner
- ☐ B. VP/Controller/Treasurer
- ☐ C. General Manager/Director
- ☐ D. Micro Manager/Specialist/Coordinator
- ☐ E. Project Manager
- ☐ F. Art Director/Graphic Designer/Artist/Illustrator
- ☐ G. Manager/Supervisor (not listed above)
- ☐ H. Architect/Engineer
- ☐ I. Systems Analyst/Programmer
- ☐ J. Consultant/Advisor
- ☐ K. Scientist
- ☐ L. Educator
- ☐ M. Editor/Writer
- ☐ N. Professional (Doctor, Lawyer, etc.)
- ☐ O. Accountant
- ☐ P. Representative
- ☐ Z. Other (please specify)

3 Your department/function at this location (check one only):

- ☐ A. Engineering/Systems Engineering
- ☐ B. Research & Development
- ☐ C. Communications/Publishing/Public Relations
- ☐ D. Art/Creative Design
- ☐ E. MIS/DP/Information Systems
- ☐ F. Manufacturing/Operations/Production
- ☐ G. Sales/Marketing
- ☐ H. Administration/Management/Personnel
- ☐ I. Accounting/Finance
- ☐ J. Education/Training
- ☐ K. Science
- ☐ L. Consulting
- ☐ Z. Other (please specify)

4 Are there Macintoshes or other PCs listed below owned and/or planned for purchase within 1 year at this location?

☐ Yes ☐ No
(Write in accurate quantity for all that apply)

	Currently Owned (Quantity)	Plan to Purchase (0-12 Months) (Quantity)
01. Macintosh II		
02. Macintosh SE		
03. Macintosh Plus		
04. Macintosh (Other)		
05. IBM/Compatible Micro		
06. Workstation (e.g. Apollo, Sun)		

5 If your firm's primary business at this location is retailing, reselling or consulting, how many Macintoshes are sold per year (answer one only):

- ☐ A. Retailer: sold per year (specify quantity)
- ☐ B. Reseller: resold per year (specify quantity)
- ☐ C. Consultant: Purchased by your clients through your firm's recommendations per year (specify quantity)

6 Please check the Mainframe(s) or Minicomputer(s) at your location (check all that apply):

☐ 01. VAX ☐ 02. IBM ☐ 03. Other ☐ 09. None

Required: Company name and company street address must be written below or applications cannot be processed. Please print.

First Name										Last Name									
Title										Business Telephone									
Company Name																			
Division										MS									
Business Address																			
City										State					Zip				

Optional: Enter home address below ONLY IF YOUR COMPANY WILL NOT ACCEPT DELIVERY. (Company information is still required.)

Post Office Box or Street Address																			
City										State					Zip				

7 Do you purchase, recommend, specify or approve any of the Macintosh/Compatible products listed below?

☐ Yes (If yes, please check all that apply) ☐ No

Computers

- ☐ 01. Macintoshes
- ☐ 02. Workstations
- ☐ 03. Minis, Mainframes

Connectivity

- ☐ 10. Local Area Networks
- ☐ 11. Modems
- ☐ 12. Micro/Mini/Mainframe Links
- ☐ 13. Communications Software

Peripheral Equipment

- ☐ 20. Laser Printers
- ☐ 21. Color Printers
- ☐ 22. Color Monitors
- ☐ 23. Hard Disks
- ☐ 24. Backup Systems
- ☐ 25. Plotter, Charting Devices
- ☐ 26. Scanners

Add-in Boards

- ☐ 40. Memory Boards
- ☐ 41. Graphic Boards
- ☐ 42. MS DOS Boards
- ☐ 43. Ethernet Boards

Software

- ☐ 50. CAD/CAM
- ☐ 51. Graphics
- ☐ 52. Desktop Publishing
- ☐ 53. Desktop Presentation
- ☐ 54. Database
- ☐ 55. Programming
- ☐ 56. Accounting, Payroll
- ☐ 57. Spreadsheets
- ☐ 58. Music
- ☐ 59. Project Management
- ☐ 60. Word Processing
- ☐ 61. Utilities

8 If you help purchase, specify, recommend or approve Macintosh Computers, software or peripherals, for how many MACs do you have this involvement over the course of one year?

- ☐ 01. 500 +
- ☐ 02. 100-499
- ☐ 03. 50-99
- ☐ 04. 20-49
- ☐ 05. 10-19
- ☐ 06. 4-9
- ☐ 07. 1-3
- ☐ 09. None

9 Please indicate the communications capabilities that the Macintoshes at your location have (check all that apply):

- ☐ 01. Local Area Network
- ☐ 02. Communicate with corporate workstations, mini or mainframe computers
- ☐ 03. Communicate with remote mini or mainframe computers
- ☐ 04. Communicate via modem
- ☐ 05. Voice/Data
- ☐ 09. Other (please specify)

10 Indicate how many employees there are in your entire company (check one only):

- ☐ 01. 1000 or more
- ☐ 02. 100-999
- ☐ 03. Under 100

11 Indicate an additional individual at this location who might qualify for a FREE subscription to MacWEEK:

Name _____

Title _____ Dept. _____

Your Signature _____

Title _____ Date ____/____/____

PLEASE BE SURE THAT ALL QUESTIONS ARE ANSWERED.

FOLD HERE FOR MAILING

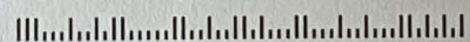
DO NOT STAPLE—TAPE HERE



Place stamp
here.
Post Office
will not
deliver without
postage.

MacWEEK

P.O. Box 5806
Cherry Hill, N.J. 08034-9641

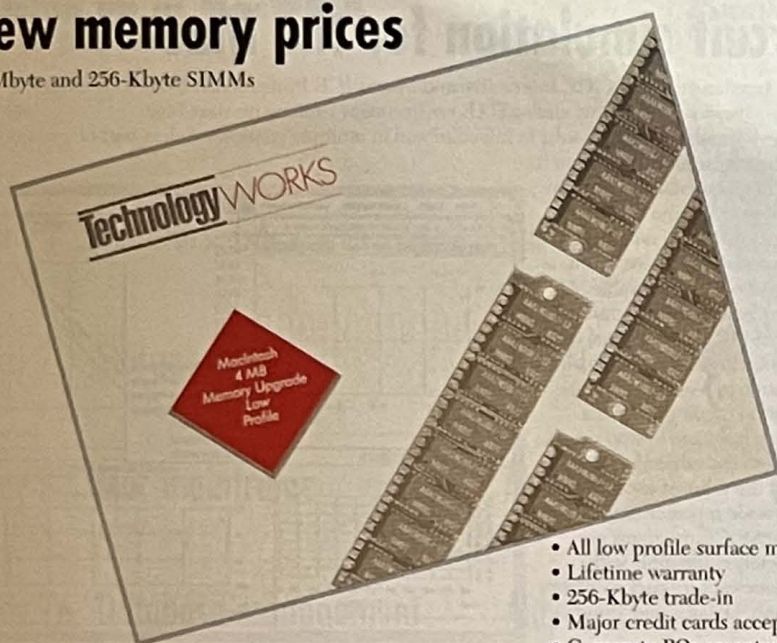


FOLD HERE FOR MAILING

DO NOT STAPLE—TAPE HERE

New memory prices

• 1-Mbyte and 256-Kbyte SIMMs



TechnologyWorks 2111 Dickson Dr. Suite 30 Austin, Texas 78704
(800) 622-2210 (512) 448-4133

- All low profile surface mount
- Lifetime warranty
- 256-Kbyte trade-in
- Major credit cards accepted
- Corporate POs accepted

Magic for your personnel department

The human resource management system that magically cuts your work and saves you time. ABRA prepares accurate personnel reports instantly! It's the ideal solution for your personnel needs. A complete employee record keeping system for only \$995:

- Salary reviews • Job history • Salary analysis • EEO reports • Insurance analysis • COBRA reports • Benefit statements • I-9 tracking • 50 "built-in" reports • Multi-user option
- Attendance option • and much, much more! "Proven" with over 1000 happy customers at companies with 25 to 7000 employees.

It's not an illusion... see the magic yourself!
Call today or send \$25 for demo and manual.

Abra MacDabra Software 485 Pala Ave.
Sunnyvale, Calif. 94086 (408) 737-9454



Mac to LaserJet – Power of choice!

Boost your output options with Printer Interface IV. This all software printer driver combines the LaserJet's built-in and cartridge fonts with any Mac fonts and 300 DPI graphics for laser quality and speed. Simple installation, chooser accessibility, true WYSIWYG and 100 percent compatibility with Mac software. Plus, landscape printing, reduce option and handling of HP's international and legal character sets make this a powerful alliance. Suggested retail – \$125. Call today!

DataPak Software Inc.
14011 Ventura Blvd., Suite 507
Sherman Oaks, Calif. 91423
(800) 327-6703 (818) 905-6419

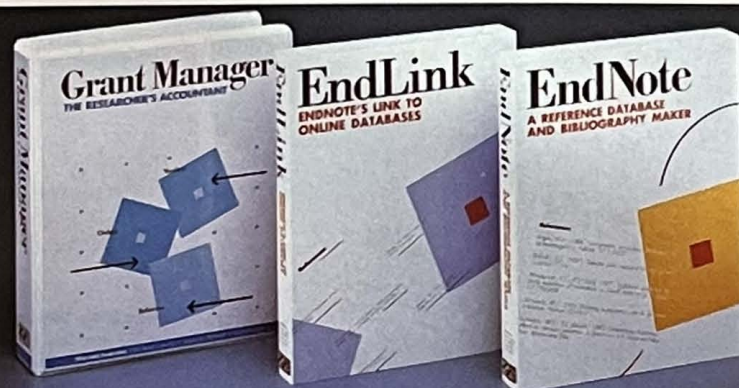


More time for research

Three software products for researchers, scholars and students:

- EndNote – Save hours of typing bibliographies! EndNote keeps a database of 32,000 references. Builds bibliographies automatically in the bibliographic style you choose. DA allows access without leaving your word processor. Works with Microsoft Word, MacWrite, WriteNow and WordPerfect. \$129.
- EndLink – Imports from online services into EndNote. Compatible with many databases on Dialog and BRS Colleague. \$99.
- Grant Manager – Let this no-nonsense ordering and accounting system keep track of your grant budgets. \$425.

Niles and Associates Inc., 2200 Powell, Suite 765, Emeryville, Calif. 94608 (415) 655-6666



Need a magic Mac?

FREE
CATALOG!

When you need a Mac for just a brief period of time, call us. We'll make the Mac you want appear, overnight if you need it.

We can work the same magic with all the popular peripherals you need, like LaserWriters, disk drives, scanners, etc.

You can rent our equipment for a week or as long as you like. When you're done, you make it vanish — by returning it to us. Best of all, by renting our Mac, you've saved money.

Call today if you need a Mac fast or if you'd like our free catalog.

For pricing and product information, call toll-free 1-800-GE-RENTS (1-800-437-3687). To receive our free catalog, call toll-free 1-800-345-2451.

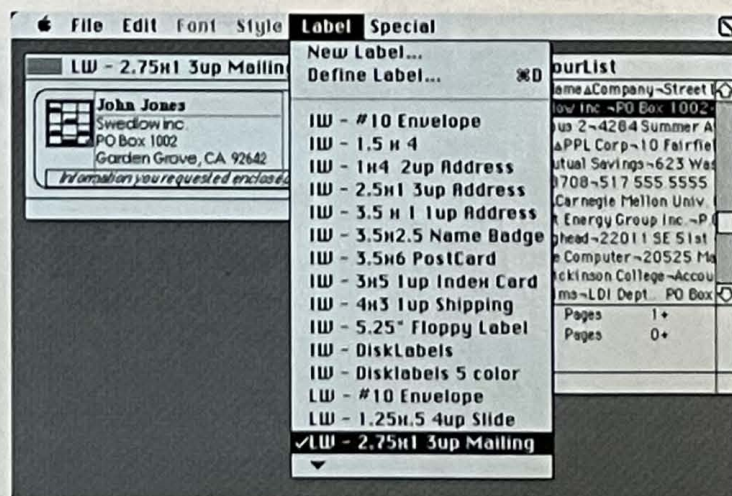


GE Rental/Lease

GE Rental/Lease
(800) 437-3687

Any label any size any printer

FastLabel prints labels of any size on any printer. Just choose a label size, enter data and print. Easy to use, yet so powerful it loads data from Helix, Reflex, 4th Dimension, File, FileMaker, Omnis, Excel and HyperCard so mailing lists are a snap. Print perfect labels every time with FastLabel. Guaranteed. Suggested retail price: \$79.95



Vertical Solutions P.O. Box 7535 Olympia, Wash. 98507 (800) 942-4008 (206) 352-2097

Unit conversions made easy!



UNITize is the cure for unit conversion headaches.

As either an application or desk accessory, UNITize quickly and easily converts between any two units in a linear quantity set. You can convert dynes to daltons, fathoms to furlongs and slubthings to fribnibbles.

Now, here's the really good part. UNITize is the only unit conversion utility which can be customized by the user. If the units you need are not contained in the 1,500 or so that we provide, you can create your own.

And relief is just a phone call away! Only \$79.95.

Rainbow Bridge Software, Inc.
4243 Hunt Rd., Suite 210
Cincinnati, Ohio 45242
(800) 548-8871

Automatic protection with FileGuard

FileGuard is the automatic file protection program that provides the most comprehensive solution to all your problems of security and confidentiality. This integrated software will enable the user to easily protect all kinds of documents against unauthorized access.

Also, by controlling the insertion of diskettes, FileGuard can even prevent the illegal copying of files or the introduction of a destructive computer virus. Suggested retail price \$249.

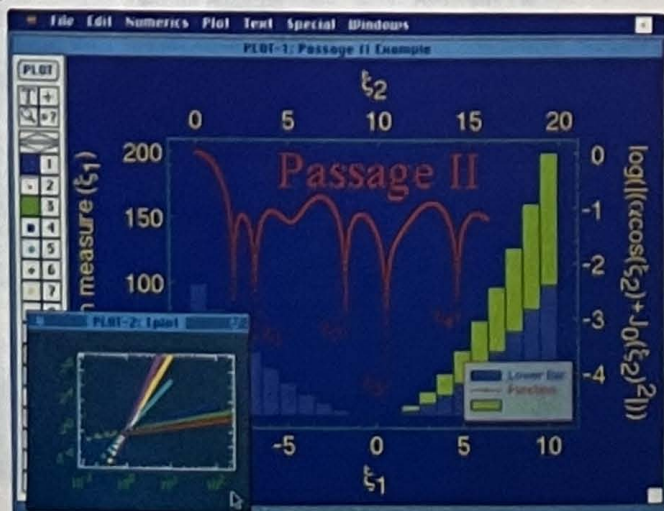


ASD Software, Inc.
4650 Arrow Highway
Suite G-21
Montclair, Calif. 91763
(714) 624-2594
Fax: (714) 624-9574

Passage II

Passage II, written exclusively for the Macintosh II, is a powerful X, Y plotting and numerical analysis program, which seamlessly integrates data input, data analysis, on-screen plotting, and publication quality output. Features include nonlinear least squares fitting, stacked histograms, and logarithmic tickling in base 2, E and 10 — \$395.

Also available, Passage for the Macintosh Plus, SE, and II — \$200.



Passage Software, Inc.
P.O. Box 8874
Fort Collins, Colo. 80525
(303) 490-1380

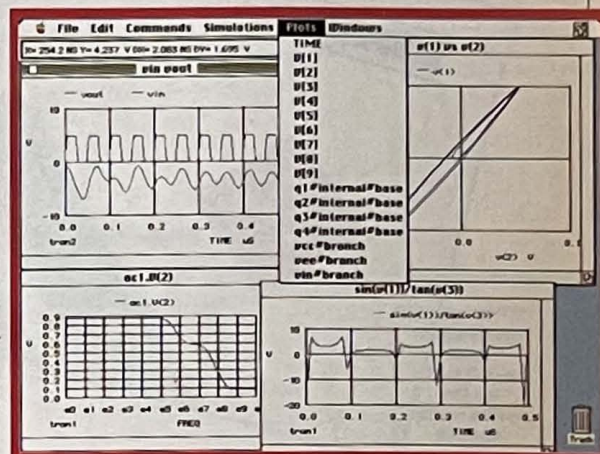
Circuit simulation for the Mac

New! Announcing MacSPICE Interactive and MacSPICE Professional. Now, you can have a complete workstation-quality analog CAE environment running on your Mac.

Run a simulation. Plot results in full color and in multiple windows. Select part of a waveform with the mouse and zoom in on it.

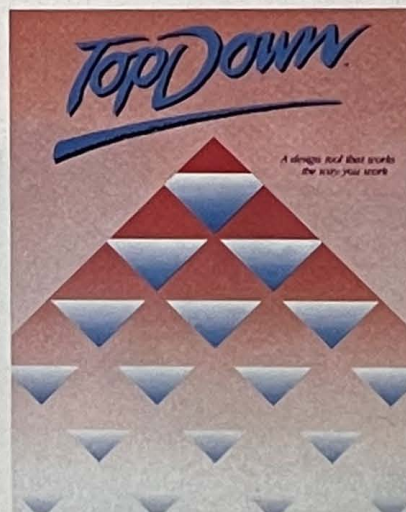
Zoom in repeatedly and measure the voltage and time at a point. Change axes from linear to log. Plot expressions of waveforms. Change a component value. All without leaving the program.

MacSPICE Professional adds the ability to see the results of simulation in real-time, as the simulation is going on, and a scripting language to stop simulation when the value of a node crosses the value of another one, and provide repeated simulations. All MacSPICE programs are completely compatible with schematic capture packages from Capilano, Douglas and Vamp.



Deutsch Research, 761 DeSoto Dr., Palo Alto, Calif. 94303 (415) 327-8677 Fax: (415) 327-0325

TopDown works the way you work



Introducing a powerful yet easy to use design tool that helps you see the big picture as well as the detail. Graphically break complex problems into manageable tasks. Each symbol in your design can be exploded into a multi-page drawing showing the details. Connect your design symbols with lines that remember the relationship and reconnect when the symbols are moved. Highlight important areas with color. Create your own symbols. Design and document in one step.

Kaeltron Software Corp.
11318 Ericson Dr.
Houston, Texas 77070
(713) 320-0278

Look out for Wild Things at Macworld

Wild Things is what you need to awaken the power of HyperCard. With Wild Things, dull and ordinary HyperCard stacks come to life, while good stacks become remarkable. Anyone can add advanced animation, statistical, and mathematic capabilities to HyperCard by simply cutting and pasting the XCMDs provided. Programmers can use the included templates and tools to create new XCMDs without getting lost in the HyperCard jungle. Comes complete on three disks with source code, stand-alone icon editor, 100 page manual, ResCopy, and HyperCard. Booth 345, Macworld Expo, Washington DC, April 25 - April 28.



Language Systems Corp.
441 Carlisle Drive
Herndon, Vir. 22070
(703) 478-0181

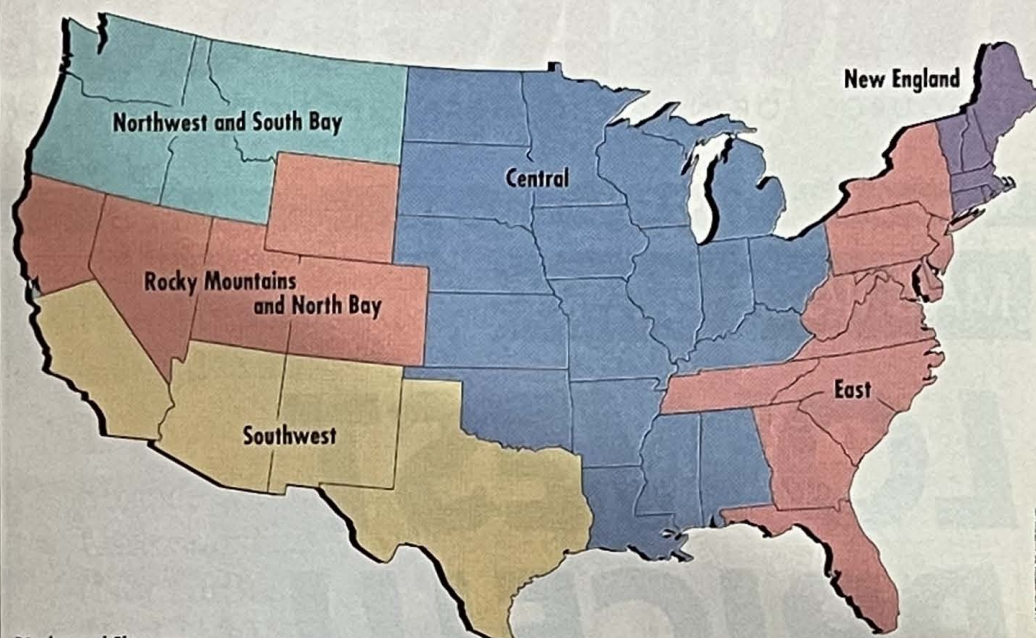
Coming up in MacWEEK WINDOW ON

Cover date

Ad close

Apr 25	Monitors, GA	Apr 14
May 2	Storage	Apr 21
May 9	Mac-mainframe	Apr 28
May 16	Database management	May 5
May 23	Scanners, GA	May 12
June 6	CAD/CAM	May 25
June 13	Printers	June 2
June 20	LANs	June 9
June 27	Telecommunications, GA	June 16
July 11	Word processing, Gateways	June 30

MacWEEK sales offices



Display and Showcase

Northwest and South Bay

Bill Peck
Western Ad Manager
(415) 243-3512

Carla Daiss
Account Executive
(415) 243-3545

Rocky Mountains and North Bay

Jeff Cohen
Regional Sales Manager
(415) 243-3511

Kathy Kottenbach
Account Executive
(415) 243-3565

Southwest

Michael Lamattina
Regional Sales Manager
(213) 387-2100

Deborah Tarantino
Account Executive
(415) 243-3535

Central

Jane Fitzwilliam
Regional Sales Manager
(312) 346-2600

Jo-Ann Sturtridge
Account Executive
(415) 243-3575

New England

Peter Stangel
Regional Sales Manager
(617) 497-2641

Leslie Hupp
Account Executive
(415) 243-3525

East

Nancy Carter
Eastern Ad Manager
(212) 503-4432

Erwin Morata
Account Executive
(415) 243-3571

Career Opportunities

(800) 288-HIRE

Michael C. Bird
Regional Manager
(212) 503-5163

Maria McDaniel
Regional Manager
(212) 503-5173

Chris Langenderfer
Account Manager
(212) 503-5162

Classified

(800) 825-4ADS

Robert Foody
Account Representative
(212) 503-5120

Amy C. Loucks
Account Representative
(212) 503-5120

Advertiser index

3Com Corp.	pages 33, 35	Dove Computer	page 16	Language Systems	page 48	Nexsys	page 9	Rainbow Bridge Software	page 48
Abra MacDabra Software	47	Dynamic Microprocessor Assoc.	41	Leasametric	10	Nikon	56	Scion	9
Advanced Gravis	46	EMAC	25	MacProducts USA	45	Niles and Associates	47	Seagate	31
ASD Software	48	Farallon Computing	63	Magnavox	39	NoRad Corp.	46	Shiva Corp.	64
Braemar Corp.	23	GCC Technologies	11	Mainstay	19	Nutmeg Systems	62	ShortWheel Technology	48
Cambridge North America	26	GE Rental/Lease	47	MicroNet Technology	59	Olduvai Corp.	40	Storage Dimensions	29
Clarix Corp.	4, 5, 42	Gimeor	36	Microtech International	15	Oracle Corp.	7	TechnologyWorks	47
Computer Care	45	Insignia Solutions	20	Mighty Chips	48	Orchid Technology	46	TMG Inc.	46
Connectix Corp.	46	IOtech, Inc.	46	Millenium Software	46	PapaGro Inc.	46	TOPS	17
Data Translation	27	Jasmine Technologies	2	Moniterm	37	Passage Software	48	Truevision	12, 13
DataPak Software	47	Kaetron Software Corp.	48	National Instruments	44	Perceptics Corp.	21	Versacod Corp.	8
Deutsch Research	48	KAO Infosystems	58	Newer Technology	43	Polaroid Magnetics	22	Vertical Solutions	47

MarketCenter

THE SOURCE FOR NEW PRODUCTS, SERVICES, AND INFORMATION IN THE MACINTOSH MARKET

Memory Upgrades/SIMMs

MAC II/SE MEMORY

LOWEST PRICE!!!

- 1 Meg SIMMs - low profile
- "No worry" lifetime warranty
- 30 day money back guarantee
- Corporate POs accepted
- Macintosh Plus/SE/II
- 256k trade-in
- Credit cards
- Call for pricing

TechnologyWORKS

2111 Dickson Dr. #30 Austin TX 78704

(512) 448-4133

Guaranteed same day shipping

Serial Ports
for your
Macintosh II

With CSI's Hurdler 2 or 4 channel intelligent serial add-in boards, featuring 68008 microprocessor and drivers in ROM. 2 Channel board (HDS) \$299, 4 Channel board (HOS) - \$379

Other NuBus boards:

Centronics Parallel Interface	\$199
Prototyping Board	\$279
NuBus to PC Bus	\$349
Extender Card	\$ 59
Dual Ported RAM	\$349

NuBus to STD, MetraBus, Opto-22 P88, and Motorola I/O Channel also available. Optional ROM Development Tools software package, \$149. Call for details or a technical data sheet.

Creative Solutions, Inc. 1-800-367-8465
4701 Randolph Rd. Ste 12 Rockville, MD 20852
Technical questions 301-984-3530
Major credit cards Fax 301-770-1675

ONE MEG SIMMs
CALL FOR
CURRENT PRICING
DIRECT FROM MANUFACTURER
AVAILABLE IMMEDIATELY
Fits All Mac Computers
Money Back Guarantee
Lifetime Warranty

NET
MICRO ELECTRONIC TECHNOLOGIES INC
35 South St., Hopkinton MA 01748
(508)435-9057
Fax # (508)435-6481

APPLE 2 Mb Simms
Limited quantities
Part No M0219 \$520

SHIVA
Net Modem 2400 \$375
Net Serial X 232 \$259

ABK Research
(305) 887-4777
FAX # (305) 887-2757
Miami, FL 33166

IN THIS SECTION

50 Memory Upgrades
Boards
Disk Drives
Simms

52 Software
Business Management
Desktop Publishing
Education
Financial
Graphics
Hyperstack
Investment

53 Hardware
Bar Coding
Cables
General
Peripherals

54 Special Services
Programming
Toner
Recharging
Used
Equipment

Accessories
CD-ROM
Connectivity
Miscellaneous

Advertising Information
(800) 825-4ADS

One Park Avenue
New York, NY 10016

Robert Foody - 212-503-5122

AL, AR, IA, IL, IN, DE, AZ, CO, NM,
LA, MN, MO, MS, NB, ND, OK, SD,
TN, TX, AK, GA, UT, ID, CA, Canada,
(Zip 93000 + UP)

Amy C. Loucks - 212-503-5131

CT, MA, ME, NH, NJ, NY, OR, MT, MD,
DC, KS, HI, NC, SC, FL, VA, WY, WA,
WY, MI, NV, OH, KY, VT, PA, Foreign
Accounts, CA, (Zip 92999 + Down)

NEW LOWER PRICES

Unitex
ESTABLISHED 1976

SIMM MODULES

4 MG SIMM	
4 MG MODULE - CALL	
2 VERSIONS AVAILABLE	
1 MG X 8 - for APPLE	
1 MG X 8-120NS	\$195
1 MG X 8-100NS	\$209
256 X 8 - for APPLE	
256 X 8-120NS	\$69
256 X 8-100NS	\$79

D-RAM TESTER
only \$249 \$169
Tests the following memory chips:
64K X 1 256 X 1
64K X 4 256 X 4
4M X 1 1M X 4
The RTI can help anyone come through the frustrating process of identifying bad (or good) D-RAM chips

D-RAM

1 MG X 1	
1 MG X 1-120 NS	\$20
1 MG X 1-100 NS	\$22
1 MG X 1-80NS	\$26
256 X 1	
256 X 1-150 NS	\$7.50
256 X 1-120 NS	\$8.25
256 X 1-100NS	\$9.00
256 X 1-80NS	\$9.75
256 X 1-60NS	\$10.50
64 X 1	
4164-150NS	\$1.80
4164-120NS	\$2.40
4164-100NS	\$2.90

2852 F Walnut - Tustin, CA 92680
Phone: 714/730-5232 • FAX#: 714/838-8593
TOLL FREE OUTSIDE CA: 1/800/533-0055

Upgrade Your Macintosh!!!

We've Moved!

Need Memory?
DON'T BE A DIP!

Some may try to sell you junk, but our SIMMs are completely manufactured by the same reliable companies that Apple buys their SIMMs from!

•Guaranteed same day shipping. •Corporate and university PO's accepted.
•Excellent free technical support. •Lifetime Warranty. •30 Day Money Back Guarantee.

Our New Address
Turbo Technologies, Inc.
112 Denton Avenue • New Hyde Park • NY 11040
(800) 542-7466 • (516) 877-7777 • FAX (516) 877-7784

FREE! Get a free professional Macintosh opening kit (Includes tools above and a wrist strap) with the purchase of 4 simms at our regular prices. Opening kits are sold separately for \$19.95.

Call Turbo Technologies at (800) 542-7466!

SIMMs**1 MEG SIMMs \$169**100ns DIP, 1 Yr. Guarantee,
Immediate Delivery**SIMM ADAPTOR
FOR 512E**With SCSI & 1 MEG **\$299**

(0 MEG \$199, 2 MEG \$499, 4 MEG \$849)

DEALERS WANTED

WANTED: 150ns. 256K SIMMs

Digi-Graphics

764 E. Village Way

Kaysville, UT 84037

(801) 544-2009

ACCU-SIMMS**\$175.00 PER MEG.**UPGRADE YOUR MAC II, SE, OR
PLUS, WITH OUR LOW PROFILE
SIMMS. WE MANUFACTURE AND
GUARANTEE THEM FOR LIFE.For further information call
1-800-662-SIMM**DATA MEMORY
SYSTEMS CO.**15 Union St., Lawrence, Ma. 01840
508-683-2325 Fax 508-975-5232**1 MEG dipSIMM**

for the MAC II, Plus and SE

Compare our prices! Why wait and
pay extra for surface mount?dipSIMMs are fabricated with CMOS dual-in-
line 1 MEG DRAM's, the same IC's die as used
in surface mount DRAM's. However, unlike
surface mount parts, we deliver, and do so at
lower prices. Call for latest pricing.**Delta Research Laboratories**11090 E. Artesia Blvd., Suite C
Cerritos, CA 90701

(800) 999-1593

Note: For Mac SE without expansion card.
Engineered by Orion Avionics.**PRICE PERFORMANCE THAT CAN'T BE BEAT !****1 MEG SIMMs**

- \$185⁰⁰/Meg
- Surface Mount
- Lifetime Warranty
- Japanese Manufacturers

- University PO's Accepted
- Same day shipping

NEW 4 MEG SIMM !

- Surface Mount Chips
- Uses standard SIMM Sockets
(Not NuBus Slots)
- 16, 17, 20 32 MB for the
MAC IIX or upgraded Mac II

CAD/CAM ■ A/UX ■ High Res. Graphics ■
Multi-User Applications**PSI**2005 Hamilton Avenue
Suite 220
San Jose, CA 95125**(800) 622-1722**
(408) 559-8544Macintosh 512KE, PLUS, SE, MAC IIX and A/UX are registered trademarks of Apple Computer, Inc.
Turbo SE is a registered trademark of SCLONE Sales and Engineering Corporation.**UPGRADE FOR LESS!**

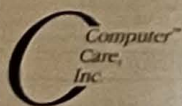
with SOFTSTEP™ memory expansion modules

**2 MEG
UPGRADE****\$295**

Mac Plus/SE

**4 MEG
UPGRADE****\$695**

Mac II

NEW LOWER PRICES ON 256K & 1 MEG SIMMS!!!**1-800-950-CARE**

in MN (612) 920-CARE (2273)

5124 Russell Ave S. Mpls. MN 55410 Fax: (612) 925-2720

© 1989 Computer Care, Inc. All product names are trademarks or registered trademarks of their respective owners.**THE ChipMERCHANT****1 Meg Simms** for Macintosh Plus, SE or Mac II

100NS

\$170.00

- 5 year guarantee on manufacturer's defects and chip failure
- Other chips available • All chips new
- Surface mount

Prices subject to change without notice.

800-426-6375**CALL (619) 268-4774**5797 Chesapeake Court, San Diego, CA 92123
Fax #619 268-0874**MACINTOSH
MEMORY UPGRADES**

- Macintosh SE, Plus, II, IIX
- 1 Meg SIMMS - low profile
- In stock
- Best pricing

CALL TODAY**800-999-9382****GRAPHICS TECHNOLOGIES, INC.**

5555 WEST 78TH STREET - MINNEAPOLIS, MN 55435

(612)944-9195 FAX (612)944-6328

MacWEEK reaches 70,000 qualified Macintosh volume buyers
at more than 33,000 corporate, government, and university sites.

SIMMs

How big do you want your Apple?

Memory Expansion SIMMs From Newer™ Technology

4MB High Profile
16 - 32MB For Mac IIx
Perfect For A/UX

1MB High Profile
Low Profile
2 - 8MB For Mac Plus,
SE, II, IIfx, and IIfx

256K Low Profile
1 - 2MB
Ideal for MAC PLUS

We Stock:
120ns SIMMs
100ns SIMMs
80ns SIMMs

- Guaranteed Same Day Shipment
- University and Corporate Purchase Orders Accepted
- Ask about our Exclusive Extended Warranty

Call Our Memory Hotline
For Prices and Discounts

1-800-678-DRAM
(678-3726)

In Canada Contact: Tallgrass Technologies, Canada, Inc. • 1775 Meyerside Drive #1
Mississauga, Ontario L5T 1E2 • (416) 673-3244 • FAX (416) 673-3926

Newer™
TECHNOLOGY

1117 S. Rock Rd., Suite 4 • Wichita, KS 67207
Phone (316) 685-4904 • FAX (316) 685-9368

DartCard™ ADDITION™ attention!™ Concentration™
Solid State Hard Disk Compaq Memory Extended Memory Expanded Memory

We Manufacture ONE MEG SIMMS

Mac II™

Mac SE™

Mac Plus™

IMMEDIATE
DELIVERY!

Don't pay the high price of resellers.
Don't settle for long lead times from other suppliers.

Buy from **Western Automation** and Receive:
• Competitive Price • 1 Year Factory Warranty • Full Service

Order Today: 800-227-4637 or 303-449-6400

Western Automation
1700 N. 55th St.
Boulder, CO 80301



SIMMS • CALL FOR PRICES

INTEL	GRAMS	SIMMS
8087	64K	256K x 8
80287	256K	256 x 9
80387	4464	1 MEG x 8
80387SX	1 MEG	1 MEG x 9
80C287A		

Fast • Reliable • Everytime

Phone: 714-855-0411
Fax: 714-855-8504

No refund - exchange only - Exchange good for 30 days
unless manufacturer warrants merchandise longer

1 MEG SIMMS

Wholesale Prices

- 256K In Stock
- Low Profile
- 5 Year Warranty

CCI
Computer Centers, Inc.
The Total Solution

CALL
1-602-220-0145

\$159

It's time for Multifinder.™

Upgrade your Mac Plus, SE, SE/30, II, IIfx or IIfx with Apple® standard 1mb SIMMs for \$159.00/megabyte.

MARKOWSKI HOUSE 1-800-RAM-4MAC

3440 Market St., Philadelphia, PA 19104 (215) 387-5803

Prices and availability subject to change without notice.

LOW COST SIMMS !!

For Mac II, Mac IIfx, SE & Plus

1 MEG *LOW PROFILE
256k \$59

Volume discounts are available.
VISA & Master Cards are welcome.

*CALL FOR CURRENT PRICES

ORDER: 1-800-446-2433 (Outside California)



BARGAINS N' DEALS
(415) 683-0908 • Fremont, CA

Beat High Memory Prices

Checkmate has SIMMs for all your Macintosh needs:

1Mb DIP (High-Profile) 100 ns/120 ns
1Mb SOJ (Low-Profile) 100 ns/120 ns

With four years as an Apple Certified Developer, Checkmate offers the best value for your dollar! Rigid quality control and volume purchases allow us to provide the highest quality products at the most competitive prices.

Call toll-free for current prices.

ORDER NOW Checkmate Technology, Inc.
Dealer inquiries welcome (800) 325-7347 or (602) 966-5802

800-284-0486

45 MB REMOVABLE DATA CARTRIDGES \$99*

Quantum 40 MB, 12 ms \$599
Quantum 80 MB, 12 ms \$899
Mac SE, II, IIfx Drive Bracket \$59
II, IIfx Full Height Drive Bracket \$69
External SCSI Drive Enclosure \$189

*Includes over 15 mb of color images

Third Wave Computing, Inc.
800-284-0486

for all SyQuest drives from Mass Micro, MicroNet, CMS, etc.

Software/ Business Management

SMART ALARMS™ APPOINTMENT DIARIES™ the ultimate reminder system



now with Printing
Snooze Button
Week-at-a-Glance
Month View
Upgrades Available

\$99 for Single User
\$199 for 1-4 (Multi-User)

by JAM Software

Dealer/Distributorship Inquiries Welcome

PO Box 1345, Pt. Reyes Sta, CA 94956 (415) 663-1041

MacWEEK reaches two out of three
Fortune 500 companies every week

Strategic Business & Marketing Plans

BizPlanBuilder™ Quickly and easily complete an effective business / marketing plan for presentation to investors, senior management or clients. A comprehensive and proven framework — Over 85 pages of outlines, headlines, structured sentences & paragraphs, lists, suggestions... already typed and formatted into 29 MacWrite™ & MS WORD™ files. Includes spreadsheet financial statements in Excel™.

Marketing & Sales Oriented Everything you will need to organize, describe, promote & support your venture (Similar to reverse engineering where the best elements of several good plans are cut & pasted together). No blank pages. Follow the tutorials & edit into a finished plan. Includes manual. Preferred by investment capital experts, corporate managers & experienced consultants.

Also available: • Investment Capital Sources
• Domestic & International Marketing
• Employee Handbook Template

Tools For Sales™ \$99 Visa • MC • Amex.
Roadmaps to Better Meetings
13333 Wilshire Drive
Los Alamitos, CA 94022
800-442-7373 • 415/941-9191
30-day acceptance / return
Site licenses available

To Place Classified Advertising in MacWEEK...

Orders for classified advertising are accepted ten working days in advance of issue date. Minimum order:

- Two inches (rate \$80/inch).
- Agency discounts not applicable.
- Refer to Classified Rate Card for frequency discounts.
- 2nd color option available (Red or Yellow)
- 3rd color option available (Red and Yellow)

MacWEEK accepts Visa, MasterCard, check or money order as payment for classifieds.

To place your ad, call **Robert Foody (212) 503-5122**, **Amy Loucks (212) 503-5131** or **(800) 825-4ADS**.

Calling about an ad?
Say you saw it in **MacWEEK**

Desktop Publishing

POSTSCRIPT PRINTING SERVICE

HIGH SPEED HIGH QUALITY HIGH VOLUME

- 92 pages per minute
- Turbo RIP with 24 MB
- Single or double sided
- 1 to 1,000 pages, multiple sets
- Automatic finishing
- Prints solid black areas
- 16 to 110 lb paper stock
- Superior 300 dpi output

Established service bureau specializing in the new area of printing Postscript documents *directly from your disk*. Our electronic Postscript printer is specifically designed to print a high volume of finished documents ready for distribution. *Call today for more information and free samples!*

Electronic Image Systems, Inc.
2845 S. Moorland, Milwaukee, WI 53151 (414) 796-8595

HI-RES-LINO-OUTPUT

HIGH RESOLUTION LINOTRONIC OUTPUT

- ✓ Competitive Rates
- ✓ Knowledgeable, Helpful Staff
- ✓ 24 HR Turn Around
- ✓ Your disk or modem
- ✓ RC Paper or Film
- ✓ MAC (All Prims.)
- ✓ IBMComp.(Pgmk.)

1-800-PS-OUTPUT IGM INNOVATIVE GRAPHIC MEDIA
Gardens, CA

Custom type font of your company's logo!

Laser Logo transforms your company's logo into a PostScript-compatible type font. Not just logos, symbols, pictographs—any graphic element you use repeatedly can be created as a Laser-Logo® PostScript font. Works like any Mac font and prints clean & sharp on LaserWriter(300dpi) or Linotronic(2540dpi). Mail or Fax (315-426-1890) a copy of your logo/graphic for quote. Note: Laser-Logos are not scanned graphics but true PostScript outline-coded downloadable fonts.

Laser Credit Card Symbol Font
Logo MasterCard, VISA and Amex symbols in our custom PostScript-compatible font. Just \$29.95 post-paid. Order yours today!

Linotronic printout. Mac or IBM file(s) as low as \$6 per page.

Services of: **GM&P**
120 Walton St. Syracuse, NY 13202 315-426-0513

To place your
Classified ad in
MacWEEK
call Robert Foody
(212) 503-5122
Amy C. Loucks
(212) 503-5131
OR
(800) 825-4ADS

Graphics

SLIDES!

ATTENTION USERS OF

- POWERPOINT 2.0
- PERSUASION
- STAND OUT!
- MORE II

DIGITAL PHOTO WILL IMAGE ANY PICT OR
24 BIT TIFF FILES, 24 HOUR MODEM

2 FREE SLIDES WITH FIRST ORDER

CALL FOR INFORMATION:

402-393-1744

\$7

MILITARY CLIP ART

ArmyArt - NavyArt - AirArt

Orders: 800-441-1228

\$69.95 ea + \$3 s/h

Info: 913-682-3668

Visa • Mastercard

Storm King Technology • PO Box 185 • Wilson, WY 83014



Hardware/Bar Coding

BAR CODE & MAGNETIC STRIPE READERS

- On Macintosh and Plus, connects on keyboard
- On Macintosh II and SE, connects on Apple Desktop Bus
- No additional port or program required
- Totally transparent to all software
- Does not affect keyboard operation
- Simple and quick installation
- Bar code print program and magnetic encoder also available

TPS Electronics

4047 Transport, Palo Alto, CA 94303
Telephone: 415-856-6833 FAX: 415-856-3843
Telex: (Graphnet) 371 9097 TPS PLA

Multi-Function
BAR CODE READERS

\$285 only (Decoder + Wand)

Complete bar code systems available
Keyboard emulation/Programable with
Macintosh, Mac Plus, Mac II, SE, IIGS
IBM PC/XT/AT, PS/2, IBM terminals
Compacq 286, 386, RS-232C

Reads all standard codes
NO software or hardware modifications
Ports for Pen and Laser Scanners

KASCO TECHNOLOGY, INC.

486 Casita Way
Los Altos, CA 94023
(415) 949-0969, FAX (415) 949-3814
>> Reseller Discounts Available <<

Calling about an ad?

Say you saw
it in
MacWEEK

• MACINTOSH •
SLIDE IMAGING

PROFESSIONAL 35mm SLIDES
DIRECT FROM YOUR DISK
OR VIA MODEM

FROM **\$650**

NO ADDITIONAL SOFTWARE TO BUY!

• Cricket
• Aldus • MacDraw
• ReadySetShow • Canvas
• Power Point • and Many Others!

24 Hour Service.
Also available - Color Prints
Slide Dupes - Overheads.

CALL FOR DETAILS!

Slidemasters
Dallas, Texas
(214) 437-0542

MacWEEK
reaches 70,000
qualified Macintosh
volume buyers
33,000 corporate,
government, and
university sites.

General

Wanted
\$20,000.
Mac's

Each day We use \$20,000. of Mac's, we buy New Macs from Retail Dealers Nationwide. Cash for "Over Stock" @ 34% 36% off. Corporate Sales Service Inc. Calls Confidential (503) 254-1897 Fax Lists to: 255-0067 Cash finder's fees paid for New "Mac Sources"

General

Graphics

POSTSCRIPT
BAR CODES

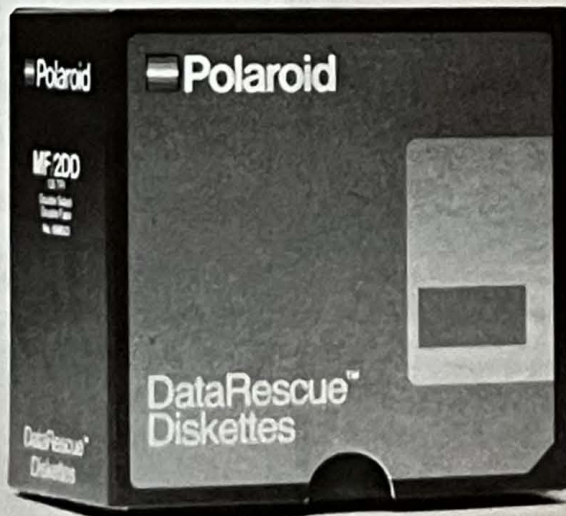
PostScript is a trademark of Adobe Systems, Inc.

- World's Leading PostScript BarCode Generator
- UPC, Code39, Interleaved 2of5, EAN
- Compatible with Xpress™, PageMaker®
- Also Freehand™ and Illustrator®88™
- Full Capability including Bar-Width Adjustment



MacBarCoda

We now supply the U.S. direct with 72hr Delivery
Call Simon Urquhart at ComputaLabel Ltd.
18a Regent St, Narborough, Leicester LE95DJ England
Phone (U.K.) 011-44-533-750131 Fax 533-862555

DataRescue™ Diskettes
ORDER TODAY

AVAILABLE NOW!

DataRescue™ Diskettes from Polaroid offer FREE data retrieval service should your diskette become damaged or contaminated. A great deal for Mac users!

Available now for immediate shipping.
3.5" MF2/DD Box of 10 \$16.90

NEW!

Polaroid Professional Quality Diskettes
(No DataRescue™)

3.5" MF2/DD Box of 10 \$12.90

Add \$3.50 for shipping and handling.
\$2.00 for each additional box.

MAC DATA PRODUCTS

2727 West Glendale Avenue
Phoenix, AZ 85051
(800) 421-3135
11 AM to 11 PM EDT Monday - Friday
11 AM to 7 PM EDT Saturday

Peripherals

TRUCKLOAD SALE**SOFTWARE PROJECTOR
Only \$899**

Save over \$600 while they last!
Project your MACINTOSH software
to a big screen for group viewing!

- Immediate Shipment • 1 year Warranty • Fast Refresh Rate
- 30 Day money-back guarantee • Black & White display
- 512 x 342 pixel array • Includes 1 Adapter for Plus & SE

ORDER TODAY!
415/892-4744

BOXLIGHT CORPORATION

COMPUTER-BASED PRESENTATION
SYSTEMS SINCE 1984

MASTERCARD-VISA
AMERICAN EXPRESS

All Discount MACINTOSH

SE/30-40 Save \$1239 **\$3630**
II-X 80-4 Save \$2019 **\$5850**
II-CX 80-4 Save \$2219 **\$4850**

MAC Central
(213) 802-7470
fax (213) 921-9597

Mac Repairs and Parts

Flybacks (UL approved) \$18.
3.9uF/100V/non-pol cap 5.
Heavy-Duty power cable 24.
Power Supply Upgrade Kit 44.
Power Supply Repairs: \$45 + parts
Motherboard Repairs: \$85 + parts
Amber or Green CRT 89.
call for other parts and services

Soft Solutions

1893 Olive, Eugene, OR 97401
(503) 344-4592

Special Services/Programming

Macintosh to VAX Integration Experts

A team of highly skilled experts is
available to service your network
integration needs.

- Network design
- LAN analysis / Troubleshooting
- Alisashare experts
- Hardware / Software installation
- Customer Training

**CNS Consolidated
Network Solutions**

410 W. Pacific Coast Hwy, Suite 322
Newport Beach, CA 92663
(714) 760-7044

Custom Macintosh Development

Our Mac team offers complete
software development services to
the nation's leading corporations
and software publishers.

- ✓ Specifications
- ✓ Software design & development
- ✓ Strong project management
- ✓ DEC-Mac connectivity (CL/1)

Call us today for a free initial
evaluation.
Contact: Jay More at 515-472-7077.

Fairfield Software

Mac Packages

**AMERICA'S
Lowest
Prices!**

New Mac CX
\$3248.
WITH FULL PACKAGE
\$6488.
100mb. RICHME
FAST HARD DRIVE
2 mb. RAM
101 KEYBOARD
256 COLOR
MONITOR
1.44 FDD DRIVE
Mac Printer
List \$8500

SE30's
\$2988.
WITH FULL PACKAGE
\$4988. PACKAGE
100mb. RICHME Drive - 2 mb. RAM
Ext. Programmable Keyboard - Mac Printer
1.44 FDD DRIVE List \$6600

SEs \$2188.
WITH FULL PACKAGE
\$3788. PACKAGE
100mb. RICHME Drive - 1 mb. RAM
Ext. Programmable Keyboard - Mac Printer
List \$5200.

"Hard Drive & Laser Printer Specialists"
SE - SE30 - Mac II - IIX - IICX
Now In Stock - 2 Day Rush Shipping
Call For Package Prices!

**Mac
Friends**

800 331-1322

Toner Recharging

**Boldest
Darkest
+ Sharpest
Black**

It all
adds up to
Quality

Lightning inc.

Toner Cartridges
Do business with
technological leaders and save money.
Or you can buy them reconditioned from
inventory. We also buy used cartridges.
Prepayment, Master Card, Visa, and PO's.
Fully Tested & Guaranteed

1-800-BLACK99

Used Equipment

We BUY Mac's & Mac Stuff!!
We Buy, Sell, & Horse-trade Popular Computers!!

**Mac Parts
Call!!**

Used Mac II's---CALL
ImageWriter I w/cable \$295.

**Shreve
Systems**
2421 Malcolm Street Shreveport, La. 71108
Fax 318-865-2006 visa/m.c. O.K. 318-635-1121

Call 800-541-2318

We Buy Macs

We buy & sell • One computer or a whole office • Talk to us before you buy!
Box 680, Waltham, VT 05573

**Maya
Computer**

Strictly Macintosh
Simply the Best

Everything Macintosh!

If you need power supplies,
memory, logic boards, CRTs,
cases, keyboards, drives or
anything else, call us toll-free
at the number below. We buy,
too.

Pre-Owned Electronics, Inc.
30 Clematis Ave Waltham MA 02154
617-891-6851 / Fax 617-891-3556

1-800-274-5343

MacHeaven needs You!

We buy & sell used Macs & Mac
peripherals.

We rent Mac systems

We also sell new Mac peripherals*
and are featuring these products:

- Jasmine
- Levco
- Everex
- Dynamac
- Seikosha
- Olympia

* Call us if you'd like your product featured!!
(703) 263-2567

Providing Good Homes to Experienced Macs Since 1987

ADVERTISING INFORMATION

Kathryn J. Cumberlander
Group Advertising Director

Cherita Batiste
Advertising Coordinator

Daniel L. Rosensweig
Group Sales Manager

Ann M. Sheridan
Production Coordinator

Robert Foody
Account Manager
(212) 503-5122

Amy C. Loucks
(212) 503-5131

or
(800) 825-4ADS

Serious Buyers.

That's who's reading MacWeek. 60,000 corporate, government and academic professionals who can and do buy Macintosh products in volume.

These people use their Macs to help them and their organizations gain a competitive advantage. They chase the cutting edge of new technology in order to get the most from their Macs — all the time.

That's why they need the weekly news format offered by MacWeek — by far the preferred newsworthy serving the Macintosh market.

Serious Selling...

What's the most cost effective way to sell to this lucrative audience? MacWeek Classified. No doubt about it. You can run display-type ads, with the option to use color to help your sales message stand out.

Give a call today to your National Classified Advertising Manager, Rob Foody at 212-503-5122, Amy Loucks at 212-503-5131 or 800-825-4ADS. He'll help you develop the best marketing strategy for your product or service.



CAREER OPPORTUNITIES

General Information Career Opportunities

For information or to place your recruitment advertisement call:

Chris Langenderfer
Account Manager
(212) 503-5162

Michael C. Bird
Regional Manager
Northwest and New England
(212) 503-5163

Maria McDaniel
Regional Manager
(212) 503-5173

or call
(800) 288-HIRE

Cathy Edwards
Career Opportunities
Group Sales and Marketing Director

Mailing Instructions
Please send all camera ready artwork c/o
Ilene Block
MacWEEK

Career Opportunities
One Park Avenue, 3rd Floor
New York, NY 10016

Telecopiers
(212) 503-5197
(212) 503-5469

Ad Closing
Friday, 11 AM
Eastern Time
11 days before issue date

Engineer an Opportunity

Applied Engineering, an exclusive Apple developer for more than nine years, is expanding product lines in the Macintosh area (while continuing development for the Apple II). We seek experienced Macintosh hardware and software professionals to join our Macintosh research and development team. We are a dynamic growth company and offer an exhilarating environment where engineers' ideas actually become products. Located in the Dallas suburbs, we enjoy competitive salaries, a non-smoking office and a spirited atmosphere. Strict confidentiality is respected. Send resume or call Director of Research and Development at (214) 241-6060.

AE APPLIED ENGINEERING®
The Apple enhancement experts.
A Division of AE Research Corporation.

P.O. Box 5100, Carrollton, TX 75011

MANAGER, ONLINE SERVICES

MacUser Magazine is extending its successful publishing activities into the online arena. We seek an entrepreneurial online professional to develop, launch and manage an interactive online service to complement MacUser Magazine.

You will design the initial online offering and maintain the service, ensuring timeliness and accuracy. In addition, you will analyze usage patterns of subscribers, respond to their needs and maintain an ongoing analysis of competitive and related services.

Our ideal candidate will have experience with online services and possess expertise in the development and management of these services. Familiarity with Macintosh hardware and software is desired.

To apply for this unique opportunity, please submit resume to
Dept. MU, Human Resources, Ziff Davis Publishing,
362 Lakeside Dr., Foster City, CA 94404. EEO M/F

MacUser



Mac Developers

Do you want to make a difference? Have you always wanted to influence the design of a new product right from the start? We are developing a new Macintosh product from the ground up. In addition to requiring a new hardware design and original code, it will necessitate breaking technological barriers on the Macintosh. This is a significant challenge, and not for the faint of heart.

The people we're looking for must have:

- Exceptional intelligence
- Unwavering enthusiasm
- Excess energy
- At least two years development experience with Macintosh or other graphics windowing environments
- A strong desire to succeed in an unproven market

Located in Minnesota, MaxType™ is a new company with big plans for the Mac. As a subsidiary of a multi-million dollar corporation, MaxType offers a unique opportunity for growth and personal development.

If you like a challenge, and want to be part of a team of people who will be setting new performance standards on the Macintosh, this could be the opportunity you've been looking for. Send your resume and salary requirements in confidence to:

MaxType™
P.O. Box 1439
Minnetonka, MN 55345

MAXTYPE™
SYSTEMS INCORPORATED

MAC OPERATOR/ GRAPHIC DESIGNER

Able to execute a great variety of work including packaging, carding, POP, signage, and catalog. Excellent company benefits. Submit resume with salary desired to:
P.O. Box 3104
Kearny, NJ 07032

MAC ART DIRECTOR

Excellent career growth potential for highly motivated applicant with minimum 6 years experience with a leading consumer goods company. Must be an able manager. Design duties to include overseeing pack carding, POP, catalog, and signage. Must be fully familiar with Mac computer. Liberal company benefits. Submit resume with salary history to:

P.O. Box 3104
Kearny, NJ 07032

MIS/4-D Developer

Los Angeles based Recycling Company seeks Mac expert to manage 4-D development. Applicant must know Excel, Insight Accounting, Pagemaker, Full-Write, & Illustrator.

Salary Open

Mr. Michael K. Stark 818-444-2531

This face will change
the face of desktop
publishing.



The beautiful reproduction you're looking at is the direct product of desktop publishing. Surprised? The photo is by Andrew Unangst, renowned for the graphic beauty of his work. The unprecedented resolution of this page is by the Nikon LS-3500 Film Scanner, soon to be renowned for the graphic beauty of its remarkable,

high definition detail and color fidelity.

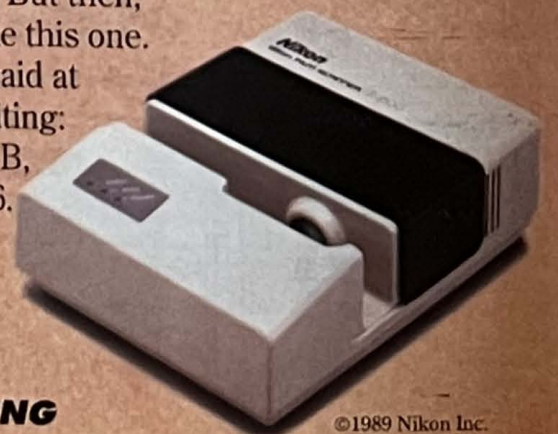
Unangst worked with a Nikon F3. The LS-3500 worked with a Mac® II. But any MS-DOS® or UNIX®-based system would have been equally adept. The original was a 35mm positive. But a 35mm negative, color or monochrome would have worked brilliantly, too.

This crisp enlargement is the result of a scanning resolution that's far superior to any previously possible. A precision Nikon lens was conceived specifically for the task. The scanner has resident intelligence so operation is effortless. And our proprietary color separating software can be used easily by your receptionist and creatively by your Da Vinci. All with unmatched precision, control and economy.

The machine is about half the size of a Mac. And goes for about what it now costs you merely to compose film seps for a couple of ads just like this one. But then, they could never be quite like this one.

Don't just take what we've said at face value. Find out more by writing:

Nikon Electronic Imaging, Dept. EI-B,
101 Cleveland Ave., Bayshore, NY 11706.



Nikon
ELECTRONIC IMAGING

©1989 Nikon Inc.

Dismal showing at Chicago MACdex

Vendors, analysts
reassess future

By Jon Swartz

Chicago — When Scott Wong registered his company for the first-ever MACdex trade show last fall, he expected to reap the rewards of large crowds, distributors and resellers.

Last week, standing in the far corner of a virtually empty MACdex exhibit area, Wong, CEO of Precision Line Inc., a Minneapolis-based Mac vendor, was reassessing his decision to register. "On the whole, I'd rather be at Comdex," he said.

Wong wasn't alone. Several vendors who participated at MACdex said they won't be back, and with the future attendance of such Mac market heavyweights as Apple and Microsoft uncertain, industry sources are doubtful the show can survive.

"One day the [IBM] PC world will understand that the Mac isn't just some kind of Nintendo-ish CPU," said one Mac developer. "Until then, I don't know if MACdex will be around long."

What went wrong? It depends on whom you talk to. According to MACdex exhibitors, poor site location, miscommunication with show organizer The Interface Group Inc. and the absence of high-profile



Undaunted by the dismal turnout at Chicago MACdex, Sheldon Adelson, chairman for The Interface Group, vowed that other planned MACdex trade shows would run according to schedule.

vendors like Apple, Claris and Microsoft seriously undercut the impact of the show.

"The mistake was in trying to isolate the Mac from the rest of the show," said Ash Jain, publisher and editor of Macintosh Market Report. "It might be all right to segregate the Mac exhibits in a special area, but there should not have been separate tickets, panels and entrance fees."

William Keiper, president of MicroAge, one of the top chains of Apple authorized dealers, agreed. "The Macintosh is one of the pillars

of the computer business today," he said. "The failure of the show merely signifies that the Mac is in the mainstream and that the days when you can isolate it in its own world are over."

The show may also have suffered from its focus on dealers and the distribution channel. "The distribution for Mac products is narrow. Everyone knows everybody already, so there's no need for a special show to bring dealers together with vendors," said Marty Taucher, Microsoft's director of communications. □

Sony to supply hard drives for Macs

By Pamela Pliffler

Cupertino, Calif. — In a move that strengthens an already firm bond between Apple and Sony Corp., Apple has signed a contract to use the Japanese company's 40-Mbyte hard disk drives in the Mac.

The contract is estimated to be worth at least \$100 million.

Sony Corp. replaces Seagate Technology of Scotts Valley, Calif., as one of Apple's main suppliers of 40-Mbyte hard disk drives. Seagate had been shipping 50,000 of the 3.5-inch drives to Apple each month, industry sources said.

Quantum Corp. of Milpitas, Calif., also provides 40- as well as 80-Mbyte drives for Apple. Mini-Scribe is the company's primary supplier of 20-Mbyte drives.

Apple began using Sony hard drives in January, and the Japanese company's share of Apple's purchases has increased steadily since then. Sources close to Sony said that the electronics giant will eventually provide more than 75 percent of Apple's 40-Mbyte drives. Sony also sells floppy drives and other components to Apple.

Sources attributed the switch to

an unusually high failure rate on Seagate drives. The company is reportedly working on engineering fixes to remedy the problem.

"When Seagate is done redesigning its drives, it'll be back in there slugging away to get the contract back," said Michael Murphy, editor of California Technology Stock Letter.

"The significance of this deal is that you better have a simple manufacturable design or you'll get knocked off," he added.

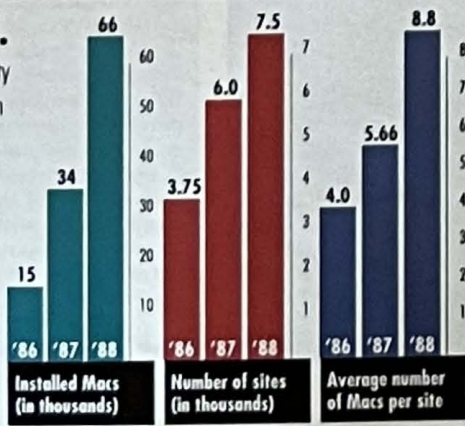
Pete Schwieder, Sony's marketing manager of magnetic disk drives, said that the instability that has recently shaken Seagate, Rodime and other drive suppliers was one factor that persuaded Apple to turn to Sony, which has enormous financial resources and a diverse product line.

"Sony is an \$18 billion company. We shipped our 10 millionth 3.5-inch floppy drive last month," Schwieder said. "Sony is in a far superior position to deal with a major OEM like Apple."

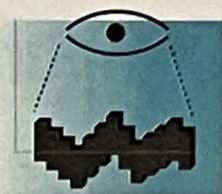
Sony's contract with Apple establishes a beachhead for other Japanese hard disk manufacturers. Schwieder estimates that the Japanese share of the hard drive market in the United States will double this year to 20 percent. □

Macs in the U.K.

There are more Macs in the city of Philadelphia (80,000) than in the entire United Kingdom. That, however, is likely to change. Quantum Research Ltd., a London based research firm, predicts that the U.K. Mac market will double in size in 1989. Up to 40 percent of that growth will come from new Mac users.



Business BRIEFS



HP-Apollo merger to claim largest share of workstation market

San Francisco — In a bold and unexpected move that will reshape the Unix workstation market, Hewlett-Packard Inc. agreed last week to purchase Apollo Computer Inc. for between \$500 and \$600 million.

The merger will give the new company 30.4 percent — the largest share — of the fast-growing workstation market, slightly edging second-place Sun Microsystems, which claims 28.3 percent. Apollo currently holds 13.5 percent, and Hewlett-Packard holds 16.9 percent of the \$4.1 billion workstation market, according to Dataquest Inc., a San Jose, Calif., market research company.

Although Apollo helped shape the workstation market and currently holds the second largest customer base — 84,000 units — its market share has been shrinking, and last year it suffered several quarters of losses or narrow profits. Apollo's net income last year was \$2.1 million on \$653.5 million in sales.

The merger agreement calls for the 9-year-old Apollo to remain in Chelmsford, Mass., but to be operated as a division of HP's workstation group, which is based in Fort Collins, Colo.

HP officials said no decision has been made with regard to layoffs at Apollo, the fate of Apollo Chief Executive Thomas Vanderslice or whether to keep the Apollo trademark. HP will pay \$13.25 per share for Apollo, a premium of some 60 percent over the Massachusetts company's pre-announcement stock price.

Analysts said that in terms of price and performance, Apollo's low-end workstation, costing less than \$15,000, and its highest performance Prism workstations, which cost closer to \$100,000, complement HP's workstation line.

Both companies use Motorola microprocessors in many of their workstations, and they helped found the Open Software Foundation last year to design a standardized version of Unix.

"HP and Apollo together represent an ideal blending of product strengths and business strategies," said John Young, HP's chief executive.

Judge rules Ashton-Tate has sole ownership of Full Impact

San Francisco — A U.S. District Court judge ruled this month that Ashton-Tate Corp. has sole ownership of its presentation spreadsheet application, Full Impact.

The ruling came nine months after Richard J. Ross, president of Berkeley, Calif.-based Bravo Technologies, challenged Ashton-Tate's right to full ownership of the program. In a letter to Ashton-Tate, Ross contended that the company had stolen trade secrets and interfered in a contractual relationship between Bravo and Full Impact's developer, Encore Systems of Campbell, Calif.

Ashton-Tate responded to Ross' letter by filing a suit requesting clarification of Full Impact's ownership. The program, which shipped last August, combines presentation technology with a full-featured spreadsheet.

The judgment declared that Ashton-Tate owns all rights to Full Impact and denied Bravo's complaints of business interference.

PostScript service bureaus form alliance

Los Altos, Calif. — Allan Ayars, a former executive of Xerox, Linotronic and most recently Quark, has launched the Typographic & Imaging Centers Alliance (TICA), an organization of PostScript service bureaus. Ayars said TICA will be a forum "for sharing product information, war stories and expertise." Annual dues are \$300 a year, and membership is limited to service bureaus with a PostScript imager of 600 or more dots per inch.

TICA is located at 991 Spencer Way, Los Altos, Calif. 94022; (415) 964-1588.

Companies turn to patents for protection

By Emily Brower

Boston — Computer heavyweights like IBM and Apple are using software patents in combination with copyrights to double up on protection of their proprietary technology, despite protests from software developers.

Apple, in particular, has used patents to protect elements of the Macintosh interface,

most notably pull-down menus. In August of 1984, the company was issued a patent that describes a "system and method ... which permits a user to select command options simply by movement of the displayed cursor over a 'pull down' menu bar."

But many industry experts and lawyers are critical of this approach to protecting software.

Duff Thompson, general counsel for WordPerfect in Orem, Utah, called the patent review process "a legal time bomb." Because a patent in review is not public information, a software developer could develop a product that infringes on a patent in review without knowing it.

For example, a patent filed in 1986 for a

widely used word processing function was recently issued, and that patent holder has put many major word processing software developers on notice, including WordPerfect. "[The patent holder] sent us a letter saying that it thought our function may be in its patent," Thompson said. "Patents permit people to lock up technology."

But experts point out that those problems are generic objections to the patent process. "There is a general lack of understanding about the law and the principles of the patent system," said David Bender, an intellectual-property lawyer at White & Case in New York. Bender said he believes that the debate in the software industry stems from this ignorance and refutes the argument that patents stifle innovation by tying up technology.

"Patents are an antidote to the cesspool of secrecy, and they encourage people to try to find new ways to achieve the same result," Bender said.

Because patents, once granted, offer such clear-cut protection, they also encourage technology licensing. Although Apple has not licensed any of the technologies included in its 51 patents, the company is a licensee of a patent owned by Cadtrak Corp. of San Mateo, Calif.

Cadtrak was granted a patent in 1987 for the use of "exclusive or," an operation of Boolean algebra, in the frame buffer of a computer using a graphic interface. The mathematical algorithm controls the cursor movement across a graphic screen without disturbing the underlying graphics. Eugene Emmerich, Cadtrak president, described his patent as a hardware patent, but he said that eight of Cadtrak's 200 licensees have embedded the technology in software.

"This is really a special way of using a mathematical algorithm that results in a smarter

See Patents, next page

The inside story on Diskaroos.™

If you take your diskettes home, or on the road, you need a place to carry them safely. You need a Diskaroo: the rugged, water-resistant, anti-static storage pack from Kao.

Inside every Diskaroo are ten 1 MB 3.5" Kao MicroDisks in five vibrant colors. Which will help you better organize your jobs. And find everything more quickly.

For High Density diskette users, there's the new Diskaroo HD: same great storage pack, containing ten 2 MB 3.5" grey Kao MicroDisks.

So whether you're a Macintosh, IBM® PS/2, or laptop user, there's a Kao Diskaroo to get you jumping for joy.

Every Kao diskette comes with a 100% lifetime guarantee. That means if it ever fails, we'll replace it. And best of all, Diskaroos cost about the same as other brands of diskettes in an ordinary box.

So what are you waiting for? Call Kao today at 1-800-443-0100 x947 for the Kao dealer nearest you. Because when you get inside information, you've got to act fast.



KAO
Media from the Surface Scientists



Software patents not yet tested

Unlike a copyright, a patent can be used to protect an idea — that is, the method or process of an invention. In exchange for disclosing the invention's details to the U.S. Patent Office, the patentee gains the right to keep other inventors from using the process or method, even if they develop it independently without knowledge of the patented process.

A patent application must meet four criteria: Its subject matter must be appropriate for patent protection, the invention must be novel, the invention must be non-obvious and the application must describe the invention clearly. The review process at the Patent Office has been shortened in the recent past, but on average the wait is still two years.

Before 1981, lawyers advised software developers against applying for a patent. It was that kind of advice that kept Dan Bricklin, developer of VisiCalc, the first personal computer spreadsheet, from seeking patent protection for his program.

But since a landmark Supreme Court decision in 1981 that upheld a patent for a computer algorithm, the use of patents to protect software has increased. These patents, however, have yet to be adequately tested in court. According to David Bender, an intellectual-property lawyer with White & Case in New York, there have been no significant cases in the area of software patents, aside from the 1981 decision. — By Emily Brower

Developers, law experts decry patents

By Michael Murie

Cambridge, Mass. — Software developers and law experts debated the pros and cons of patent protection at a forum titled "Software patents: A horrible mistake?" last month at the Massachusetts Institute of Technology.

Most participants in the forum were adamant that the patent system — as opposed to the use of copyrights — is unworkable for the software industry and that the increasing number of patents being sought from and granted by the U.S. Patent Office will cause even more headaches for developers.

Dan Bricklin, creator of VisiCalc, the first microcomputer spreadsheet, said he believes that if he had been able to patent VisiCalc, the industry would not have benefited, but he would be \$200 million richer.

Lindsey Kiang, software counsel for Digital Equipment Corp., was the one dissenting voice on the panel. Corporations should be able to protect their investment in developing software just as they can with hardware, he said. Patents protect small companies as well as large ones, and any radically new technology will be licensed. In addition, he said, DEC is not interested in copying other people's technology.

Bricklin countered that Apple, for example, is hardly likely to license technology to other platforms. He said that Digital Research Inc. (DRI), developer of the GEM graphical shell, was forced to capitulate to Apple's charges of infringement on its software design because DRI could not afford to litigate.

Pam Samuelson, a professor at Emory Law School in Atlanta, cited the patenting of manual methods as particularly worrying, simply because they had been coded as a computer algorithm. In noting that IBM is patenting more than 200 software processes a year, one participant claimed some developers were "stockpiling" patents to protect themselves from litigation.

The Patent Office could work to improve the current software problems by more closely regulating the patents being allowed, said Rob Merges of Boston University Law School. The Patent Office uses the term "prior art" to describe existing knowledge and technology. A patent can be rejected if the office believes the difference between prior art and the patented process is negligible and would not be "obvious" to the ordinary person.

Merges suggested that the Patent Office could:

- Raise this "obviousness test" to apply to a programmer rather than the ordinary person so that only unique new algorithms are given protection.

- Clamp down on applicants who make excessively broad claims, seeking patents on current technology used in conjunction with their innovations.

In his closing remarks, Bricklin said that software developers have to spend money in Washington and develop a legislative strategy to correct the current situation. Money, he said, comes not from litigation, but from people buying products. □

Patents *Continued from previous page*

way to use the frame buffer," he said.

Although Apple has benefited from licensing patented technology, there is no indication it plans to grant licenses for its own patents. Whereas Apple is litigating its right to copy-right the Mac graphic interface, it has yet to enter into litigation concerning its patents.

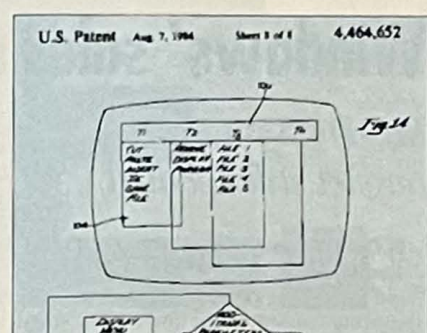
Microsoft Chairman Bill Gates said his company doesn't "have a very high opinion" of Apple's pull-down menu patent.

"Steve [Jobs] did think his patent might be

worth something, but it only has to do with a specific element of click-drag that had been used by Xerox many, many, many times before this patent was filed. It's not something that ever concerned us," he said.

But, WordPerfect's Thompson said, "the days of the software gunslinger" who can ignore patents that others may hold are over. Software developers have to wander around a playing field littered with legal mines." □

This image was scanned from the documentation from Apple's 1984 patent application on pull-down menus.



The Finest SCSI Data Storage Systems For The Macintosh

- "Zero" Foot Print Externals for Mac IIcx
- Combo Hard Disk and Tape Systems
- 45 MB Removable/Single or Dual Systems
- Internal and Externals from 20 to 600 MB
- 10.7 ms - 321 MB - Wren Runner
- 15 ms - 172 MB - SE/30 or IIcx
- 320 MB Streaming Tape Backup
- Mac/OS and A/UX Partitions

"Power Matched" Storage Systems For The Mac Plus, SE, II, IIx, SE/30 and IIcx



Wren Runner - 10.7 ms - SCSI Hard Disk Drive

MicroNet's III-330 or SBX-330, developed around the new Imprimis Wren Runner, 321 MB, 10.7 ms drive, is the fastest SCSI hard disk drive available. Best used with a Mac SE/30, II, IIx or IIcx with disk intensive applications.

150, 300 and 600 MB - 16 ms Access

MicroNet specializes in Control Data/Imprimis drives that are industry known for their reliability and speed. Internal and external systems with tape combinations available.

Micro/Slack Series - 20 to 173 MB Systems

MicroNet offers 20, 45, 62, 90 and 173 MB, fast access hard disk drives in our zero foot print cabinet for the Plus, SE, SE/30 and the new IIcx. Plus our 60, 150 or 320 MB streaming tape or 45 MB removable cartridge systems.

Micro/Internal Series - 20 to 600 MB

We offer a complete range of internal systems for the Macintosh SE, SE/30, II, IIx and IIcx that are "Power Matched" with CPU and triple tested to ensure reliability.

Call today for data sheets. Products sold through dealers only. Dealer inquiries invited.
We maintain excellent quality standards and offer superior technical support.



MicroNet Technology, Inc.

13765-A Alton Parkway • Irvine, CA 92718 • Telephone: (714) 837-6033
FAX: (714) 837-1164 • AppleLink: D1656 • Compuserve: 76004,1611

Windows' sales now match the Mac's

MS-DOS interface impact still debated

By Charles Berman

Redmond, Wash. — Microsoft Windows, the graphically based operating environment for MS-DOS, is now selling 50,000 to 70,000 copies monthly, making it "as popular a graphical user interface as the Macintosh," according to Steve Ballmer, Microsoft's vice president of systems software.

Since the installed base of IBM PCs is at least nine times greater than that of the Mac, 50,000 copies

of Windows a month may be a less impressive figure than it sounds. And Ballmer admits that users don't have the same emotional involvement with Windows as Mac users often do with Apple's interface.

The continuing popularity of Windows, however, will set the stage for applications that take advantage of the similar interface Microsoft and IBM have built into the Presentation Manager for their OS/2 operating system.

Not all users agree on the value of Windows. Some have said they feel it transfers the Macintosh's strengths to the IBM PC, while other users maintain that Windows

still has a long way to go.

"Windows is of value not only to a new user, but to an occasional user who doesn't want to invest the time to learn a variety of user interfaces," said Art Roberts, manager of business planning and management for 3M Corp.'s commercial graphics division in St. Paul, Minn. "We are presented with a standard without having to go to the manuals. It allows scientists, secretaries and technicians to look at the same thing."

The Mac may have been there first, but if PCs get the benefits of a consistent graphical interface, the arguments Apple has used to pro-

mote the Mac in the Fortune 500 domain may lose some of their force, especially since PCs have several advantages in connecting to IBM mainframes. "With Windows, the Mac and IBM start to look and function alike," said Roberts, "so you have to start asking if there is still a significant differentiation that makes the Mac more useful."

On the other hand, Windows has serious drawbacks. The program has yet to live down its initial reputation as slow and clunky. In addition, it remains to be seen whether the Microsoft interface will attract enough support from applications developers to create a standard users can rely on when they pick up a new program.

"With the Mac, the same interface permeates through all applica-

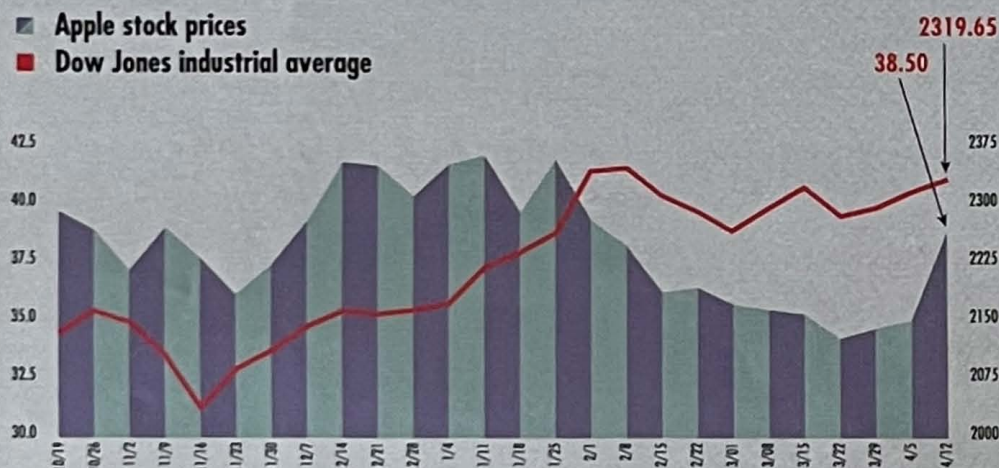
tions; on the IBM side there isn't that consistency yet," said Paul Goldberg, a partner in the tax technology department of KPMG Peat Marwick of Montvale, N.J. For Windows to succeed, Goldberg said, "it will have to be such a powerful force that all other applications will want to use the same metaphor."

"Even if there are 1.5 million copies of Windows out there, they may not be in use on a consistent basis. DOS people who bought Windows will still boot up (non-Windows) Lotus," said analyst Tim Bajarin, vice president of Creative Strategies in San Jose, Calif. "Fifty thousand of anything a month is impressive," he said. "But even if this continues, I don't know if it will have the same impact." □

MarketWEEK

STOCKWATCH

■ Apple stock prices
■ Dow Jones industrial average



Apple, Sun each report share increases of 10 percent

Investors finally began adding shares of Apple stock to their portfolios during the week ending April 12, pushing Apple's shares up 10 percent to \$38.50 in active trading.

Strong demand for the Macintosh IIcx, Apple's opening round legal victory over Microsoft and

Hewlett-Packard, and a buy recommendation from First Boston rescued Apple from a rough-and-tumble month of trading in March. Microsoft shares fell 4.71 percent for the week.

Apple would have been the largest gainer if it hadn't been for Sun Microsystems, which leapt

10.08 percent to \$17.75 per share. Last week Sun announced that it was entering the low-end computer market with several new computers.

Businessland tacked on 8.7 percent to bring its shares to \$12.50 as it expects record profits for the quarter.

Macintosh-related stocks

		CLOSING PRICE 4/5/89	CLOSING PRICE 4/12/89	PERCENT CHANGE IN PERIOD	P/E RATIO	ANNUAL HIGH	ANNUAL LOW
MAC-RELATED COMPANIES	Adobe Systems	21.75	23.75	9.20	21	26.00	15.13
	Aldus Corp.	15.75	16.00	1.59	14	24.50	14.75
	Apple	35.00	38.50	10.00	12	47.50	32.50
	Ashion-Tate	19.63	19.13	-2.55	10	29.75	18.50
	Businessland	11.50	12.50	8.70	12	15.25	8.63
	Microsoft Corp.	50.38	48.00	-4.71	19	70.50	45.25
	Motorola Corp.	42.00	45.50	8.33	13	54.63	35.88
	QMS Inc.	7.63	7.88	3.28	0	12.00	6.00
	Seagate	12.13	12.63	4.12	0	22.75	6.50
	3Com Corp.	25.13	26.25	4.48	23	28.13	15.63
INDUSTRY INDICATORS	Digital Equipment	96.63	97.75	1.16	11	122.38	86.38
	IBM	107.75	110.88	2.90	11	130.88	106.25
	Sun Microsystems	16.13	17.75	10.08	16	21.13	13.00

S=Reflects stock split

D=Deficit

Compiled by Nordby International Inc., Boulder, Colo.

MARKETWATCH

MIS casts deciding Mac-to-mainframe vote

When Mac-to-mainframe connections are needed, do MIS or users make the decision?

Among the 269 very large Mac sites recently polled by MacWEEK, the manager or a member of the work group being connected initiates the request at 66 percent of sites, while MIS initiates the request at only 26 percent of sites.

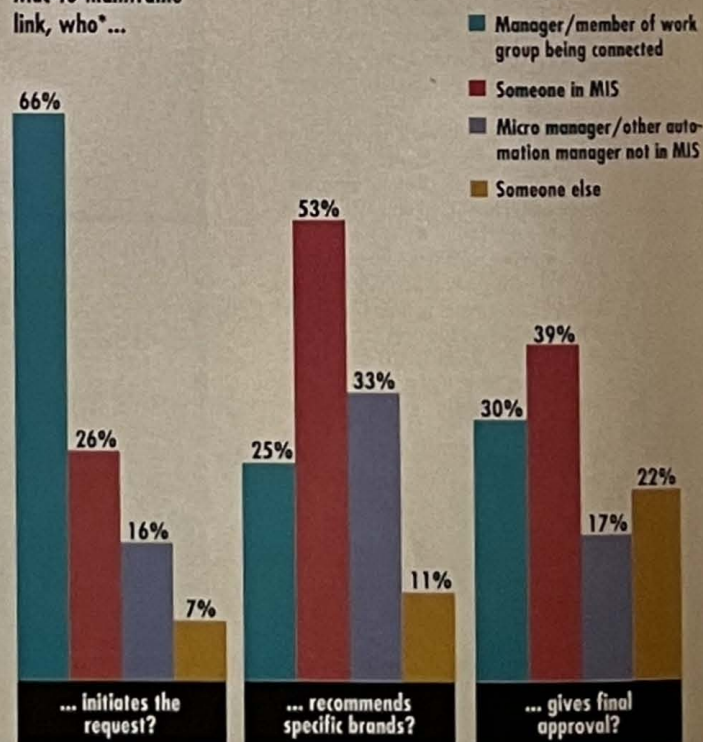
MIS, however, is most likely to specify the brand of connectivity product (53 percent), followed by a micromanager not in MIS (33 percent) and the work group being connected (25 percent).

MIS gives final approval at

more sites (39 percent), but the work group being connected is also frequently involved (30 percent), and someone else, such as the controller, frequently must also sign off (22 percent).

The more powerful and complex the hardware to which Macs are being connected, the more involved MIS is (see MarketWEEK, April 4 and 11). But whether it is micros, minis or mainframes, in at least 25 percent of sites, the work group being connected has a say in initiating the link, specifying brands and giving final approval. — By Griffin Dix

For a new Mac-to-mainframe link, who*...



*Multiple answers

Base: Have Mac-to-mainframe link at location

Source: MacWEEK/Essam Research

TIME.



MacWEEK

Build a message. Spread the word. Months? Years? Try weeks. Who reads it? Giants. Jugger-nauts. Mega Mac types. Everyday. Want an average? Try 102 minutes—every subscriber, every issue. Four times a month. Six hours. Think about it. Two Superbowls. Five facials. New York to Lisbon. Your message. Your money. Your move. MacWeek.



Neither rain nor sleet ...

Summer will be no time for vacations, at least not for those in the habit of keeping a close eye on Apple. The calendar will be littered with announcements, including, perhaps as early as June, Apple Mail, which the Knife's informants say will be a system-level store-and-forward protocol that will, among

other things, change the way E-mail works on AppleTalk networks. Sources say third parties will have to adapt their applications to coexist gracefully with the new protocol.

Whether or not the Apple IIGS is nearing the end of its life, sources tell the Knife that June or July will see the unveiling of a IIGS version of HyperCard, a product that will

probably breathe new life into that troubled platform. In the best of all possible worlds the next version of the IIGS will be able to read Mac stacks directly via SuperDrive.

Several sources also claimed this week that the upcoming low-end Mac will be bundled with IIGS emulation software. While the Knife, intimately familiar with other software

CPU emulation products, deduced that performance would probably suffer in such a scheme, he did admit that it would be a clever move on Apple's part to provide the IIGS emulator as a check-off item for volume educational buyers who will need the ability to run IIGS software, if for no other reason than to meet organization purchasing guidelines.

The Knife also learned this week that the low-end Mac will include one slot, although reports conflicted as to its exact nature. A Processor Direct Connect slot similar to that used in the SE/30 would probably provide greater performance, while the standard SE-issue slot would mean that many more interface cards would be available, at least initially.

No matter what the slot configuration, the introduction of the Hyundai of Macs will pose some positioning problems for Apple. Will the Plus fade away into the California sunset? And what other than a considerable wad of cash would differentiate a one-slot, Apple Desktop Bus-equipped 68000 low-end Mac from an SE? This is all enough to make one think the entire compact Mac line is in for an overhaul sometime next year.

Anticipation. Silicon Valley is rife with rumors of further delays of the pre-announced portable, so it looks as if yet another beach season will come and go before it arrives. Nevertheless, Apple is working on succeeding versions of the machines, including a hard disk option that will use a 1-inch-high subsystem currently being developed for Apple by Sony.

There's good news for HyperCard users who are tired of waiting for Apple's overweight portable and purchased a DOS-based laptop. Spinnaker of Cambridge, Mass., is rumored to be planning an announcement of a DOS product that runs HyperCard scripts. (Now there's a product for Apple's legal eagles already nervous about some announced HyperCard compatibles to mull over for a while.)

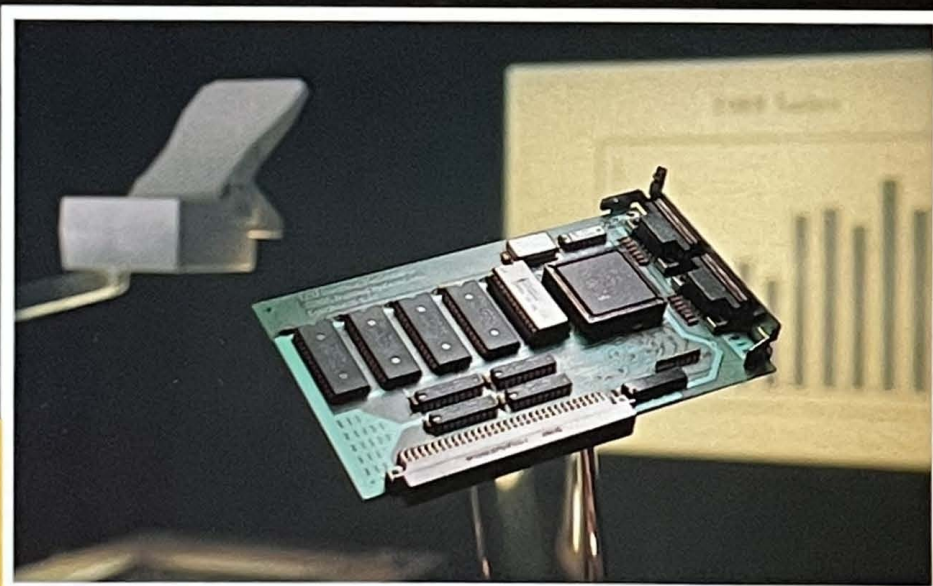
The right connection. Details are sketchy, but the Knife's friends at AT&T report that the telecommunications giant has been involved in a joint project with Apple to develop the handwriting recognition tablet for the Mac that Sculley has mentioned recently. The project team, which is working in AT&T offices in Allentown, Pa., is said to be very small and a very tightly guarded secret.

Speed counts. In late June or early July Odesta will join the product announcement bandwagon with the unveiling of new versions of three products. Both GeoQuery and DataDesk will be several orders of magnitude zippier than the current versions. But the new version of Double Helix is likely to generate the most excitement. Among other enhancements, Double Helix 3.0 will feature multi-threading, which will allow simultaneous queries by multiple users of the the same data records, and RMS Access, which will allow Double Helix to access VAX databases in native file format.

Finally, congratulations to Microsoft for finalizing Word 4.0 after only 43 separate beta versions. Although Bill Gates' laudable promise of a bug-free release predictably won't be kept (there are still known bugs in the implementation of page numbers in footers, and the work-around for the bug in importing style sheets is less than intuitive), it's still rock solid compared with previous point zero incarnations.

You can be more than a pawn in a game played by giants. Trade your insider tips with Mac the Knife for a high-tech MacWEEK mug. Contact the Knife at (415) 234-3500 or MCI (MactheKnife).

Blow Up Your Mac II



with a Nutmeg LCD Interface and the Kodak DATASHOW HR/M™

The Nutmeg LCD Interface is the only video board which allows the Kodak DATASHOW™ to be used with the Apple Macintosh II. Simple to install, simple to use, the LCD Interface matches the quality and ease of use of the Datashow. They are a perfect pair.

Nutmeg Systems is the premier supplier of a full line of video products for all Macintosh computers. See your Apple dealer, or call Nutmeg at

800-777-8439

**Nutmeg
Systems**

Nutmeg Systems, Inc.

25 South Avenue
New Canaan, CT 06840
203-966-3226

United Stations.



If your business is using AppleTalk networks, then you're ready for the next big advance in office communications.

Introducing Timbuktu, the new application for your network that lets you access and share resources. It's just what you'd expect from the people who brought you the PhoneNET System.

Granted, the name is a little unconventional. But the time and money Timbuktu saves will appeal to even the most conservative minds.

Install Timbuktu on each Macintosh, and everyone on the network can access other Macintoshes, share screens, and control the operation of each other's computers. In fact, you can access your own computer from another computer on the network. (Our companion product, Timbuktu/Remote, works the same way over modems.)

So, if you're the one who's always fixing things on the network, helping solve computer puzzles, and other office heroics, then leave your running shoes at home.

Now, you can identify problems on any Macintosh, reconfigure or update software, teach people new applications, or manage servers and other shared resources. Right from your own Macintosh. Or any other Macintosh, for that matter.

For those pressured with meeting the demand for more computing power, while justifying the cost to management, Timbuktu offers a profitable solution. And relief.

Timbuktu lets everyone access any workstation and its databases, FAX modems, print spoolers, servers, and main-frame connections. If you're concerned about security, the password protection feature will limit access to any device. You can also use Macintosh IIs as servers without buying keyboards, monitors, or video cards.

Timbuktu. What we're talking about is people working together, sharing resources, and helping each other get the job done. Only now you can do it over the network, with united stations. To find out more about Timbuktu and the rest of the PhoneNET System, call (415) 849-2331 for the Farallon dealer nearest you.

 **Farallon**™
2201 Dwight Way, Berkeley, CA 94704



There Are Still A Few Places Even A TeleBridge Network Can't Reach.



Now you can extend your PhoneNet® or AppleTalk® network to reach almost anywhere on earth. Two networks, each equipped with a Shiva TeleBridge and a modem, can be connected via phone lines to form a single internetwork – even if they're thousands of miles apart. So you can work as productively across an ocean as you do across your office. The TeleBridge and modem can also be used by any Mac on either network for other modem communications, just as if each Mac had its own modem. And with Dial-In Network Access™ you can use a single Mac with a modem to dial in from home, a customer's office – even a motel room. Access printers, file servers, E-mail or any other network resource just as if you were



sitting at your office Mac. A TeleBridge is easy to set up, too. Just plug in two network connectors, connect the modem and turn on the power. Give your network global power with the new Shiva TeleBridge. Call 1-800-458-3550 or write Shiva, 155 Second Street, Cambridge, MA 02141.

TeleBridge™
by Shiva

We're Putting Networks To Work.®

Trademarks: TeleBridge, Dial-In Network Access – Shiva Corporation. Registered Trademarks: AppleTalk – Apple Computer, Inc.; PhoneNet – Fazzlani Computing, Inc.